

Montana

Water Supply Outlook Report

May 1st, 2015



Snow Surveyors across Montana and Wyoming pulled out all the tricks, and often used multiple modes of transportation to measure snowcourses for the May 1st Water Supply Outlook Report. Snowpack conditions in some locations across the state are record low, or near record this date, with warm and dry weather persisting through the month of April. Snowmelt began this year well ahead of schedule at low elevations during the month of March and all elevations transitioned to melt during the month of April. (Photos: Eric Larson, Lucas Zukiewicz)

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How forecasts are made

Most of the annual streamflow in the Western United States originates as snowfall that has accumulated high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are combined with snowpack data to prepare runoff forecasts. Streamflow forecasts are coordinated by Natural Resources Conservation Service and National Weather Service hydrologists. This report presents a comprehensive picture of water supply conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data, and narratives describing current conditions.

Snowpack data are obtained by using a combination of manual and automated SNOTEL measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation and temperature are monitored on a daily basis and transmitted via meteor burst telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

Forecast uncertainty originates from two sources: (1) uncertainty of future hydrologic and climatic conditions, and (2) error in the forecasting procedure. To express the uncertainty in the most probable forecast, four additional forecasts are provided. The actual streamflow can be expected to exceed the most probable forecast 50% of the time. Similarly, the actual streamflow volume can be expected to exceed the 90% forecast volume 90% of the time. The same is true for the 70%, 30%, and 10% forecasts. Generally, the 90% and 70% forecasts reflect drier than normal hydrologic and climatic conditions; the 30% and 10% forecasts reflect wetter than normal conditions. As the forecast season progresses, a greater portion of the future hydrologic and climatic uncertainty will become known and the additional forecasts will move closer to the most probable forecast.

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Montana Water Supply Outlook Report as of May 1st, 2015

Snowpack

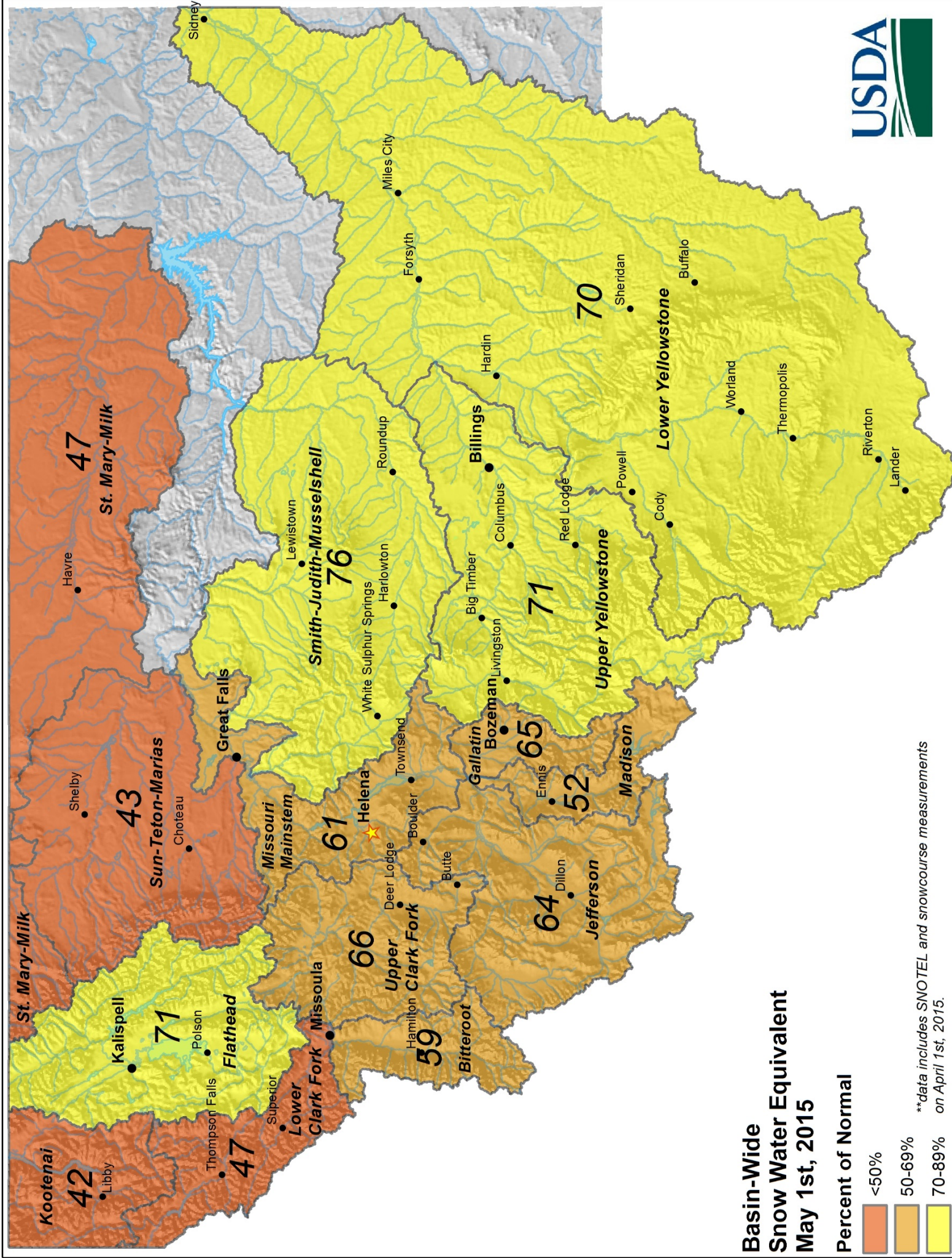
Compared to many of the western states Montana is in decent shape snowpack wise this spring, but that doesn't mean the situation around the state is good. It has been a record breaking year snowfall wise, but not the type of records that are good to break. On April 1st there were 47 measurement locations that set new period of record low snow water equivalent values for that date, and there were 36 locations that set new records for May 1st. This isn't to imply that conditions have improved, as many of the sites that set records in April were low-elevation and typically melt out before May 1st. What it does mean is that the well below normal snowfall and well above average temperatures have persisted this month, transitioning some of the mid and high elevation sites into this category for May 1st, leaving us with a historically low snowpack in some locations for our period of measurement.

Typically the snowpack in Montana reaches peak accumulation between April 1st and May 1st depending on the location and elevation. Low elevations made the transition to melt during the middle of March, the remaining snowpack at higher elevations made the transition during the middle of April. In most locations snowpack peaks were 2 to 3 weeks early this spring, low-elevations peaked during the beginning to the middle part of March, while upper elevations peaked during the middle to end of April.

All basins across the state are well below normal for May 1st, down yet again from April 1st due to the melting at almost all elevations during the month. Four basins in the northern part of the state have less than 50 percent of normal snowpack for this date (Kootenai – 42%, Lower Clark – 47%, Sun-Teton-Marias – 43%, St-Mary-Milk – 47%). There was no improvement during the last month, something we have been hoping for all winter, and the snowpack contribution to streamflow will be well below normal this year in most basins.

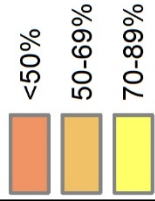
On May 1st state-wide snowpack is 61 percent of normal, and 39 percent of last year at this time. It is easy to compare this year to last year as it is in recent memory, but there should be no uncertainty that this year is completely different snowpack wise. The message this month may be disappointing but that may make it easier to remember for quite some time.

<i>Snow Water Equivalent</i>		
<i>5/1/2015</i>	% Normal	% Last Year
Columbia River Basin	62%	39%
Kootenai in Montana	42%	29%
Flathead in Montana	71%	46%
Upper Clark Fork	66%	41%
Bitterroot	59%	31%
Lower Clark Fork	47%	29%
Missouri River Basin	58%	39%
Jefferson	64%	45%
Madison	52%	39%
Gallatin	65%	44%
Headwaters Mainstem	61%	34%
Smith-Judith-Musselshell	76%	48%
Sun-Teton-Marias	43%	24%
St. Mary-Milk	47%	32%
Yellowstone River Basin	72%	46%
Upper Yellowstone	71%	43%
Lower Yellowstone	70%	47%
East of Divide	63%	41%
West of Divide	62%	39%
Montana State-Wide	61%	39%

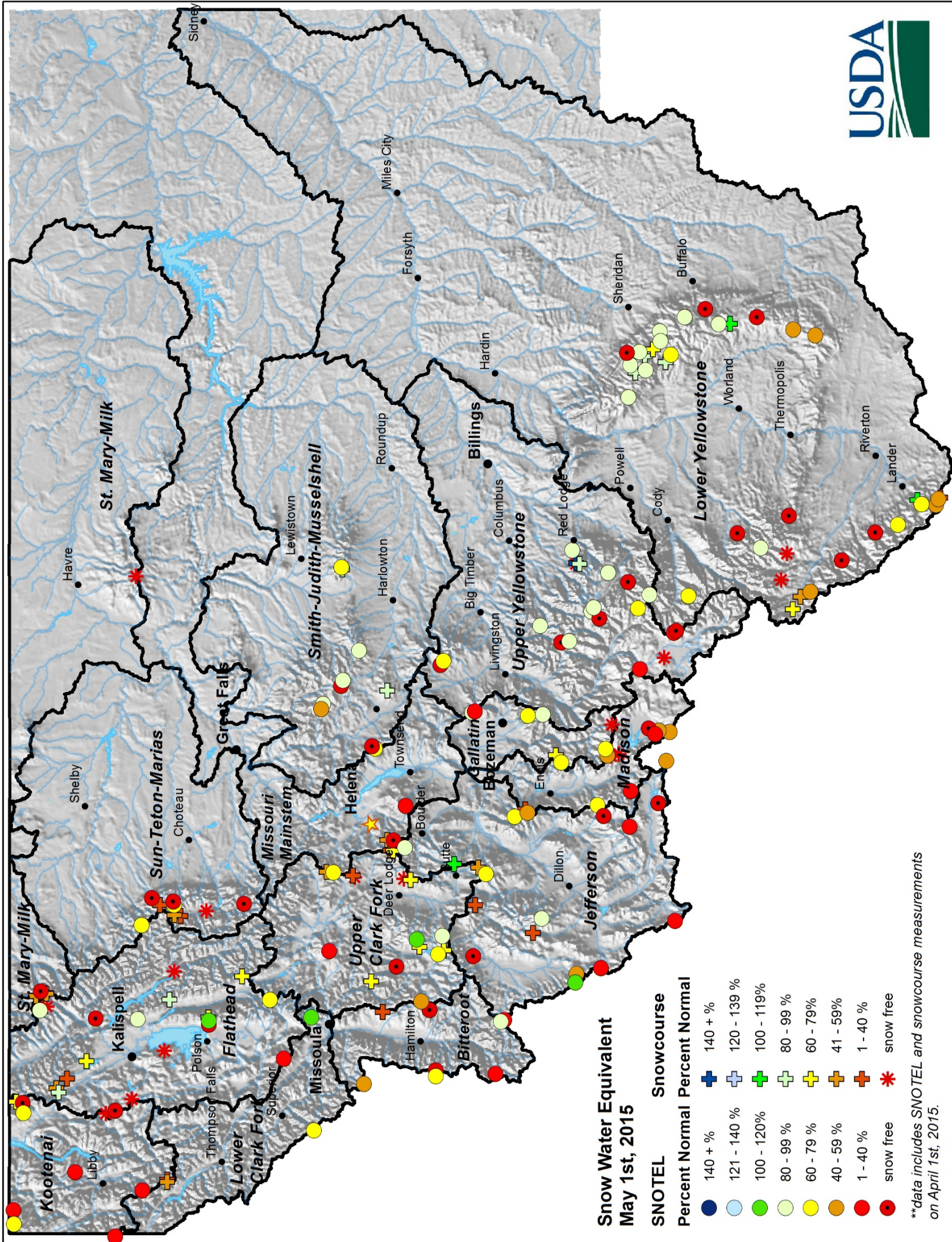


Basin-Wide Snow Water Equivalent May 1st, 2015

Percent of Normal



**data includes SNOTEL and snowcourse measurements on April 1st, 2015.



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Precipitation

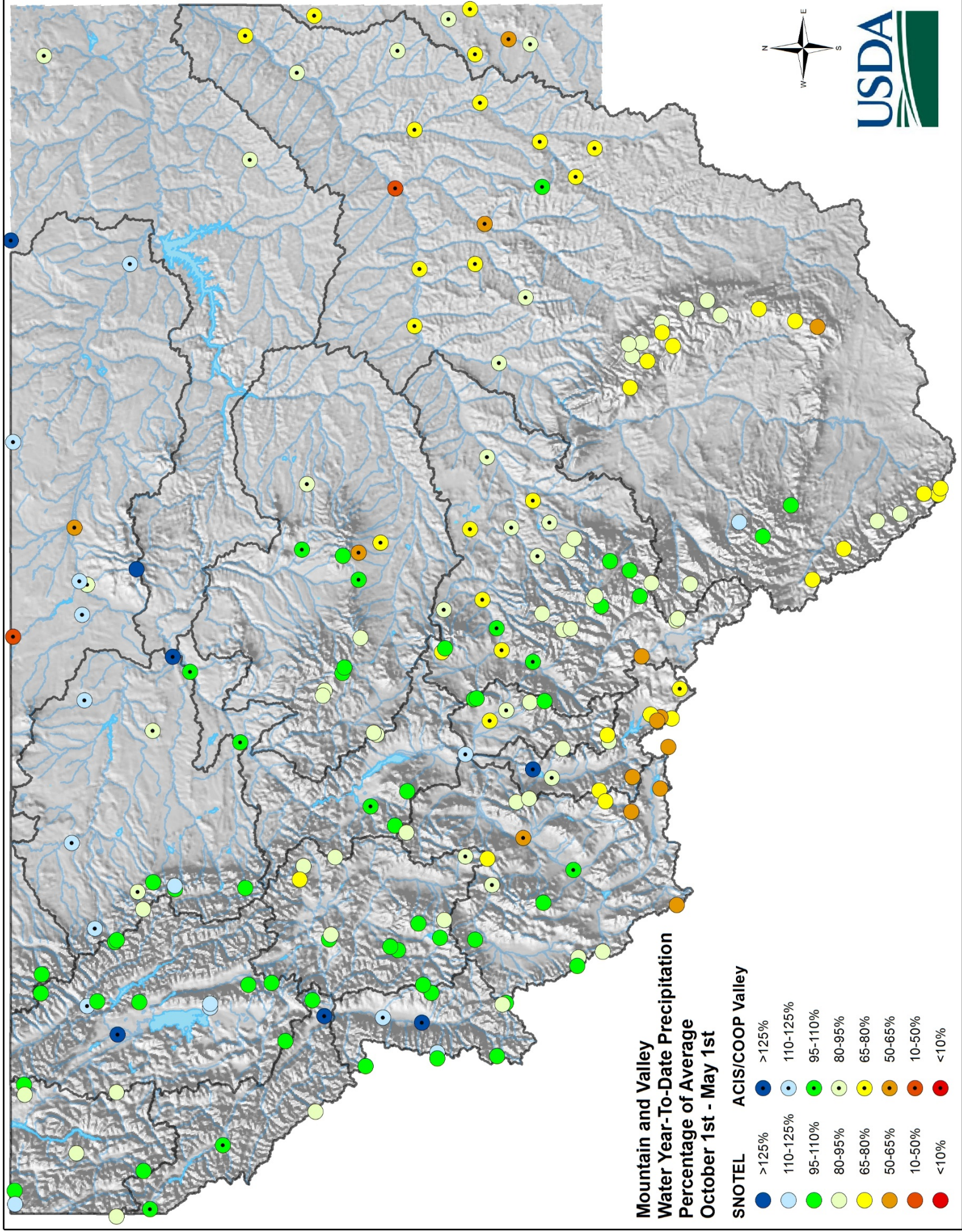
Compared to the snowpack percentages of normal water year-to-date precipitation percentages across the state are closer to normal conditions for May 1st in the central and northern halves of the state. The abundance of precipitation in the form of rain in place of snowfall through April 1st west of the Divide had boosted the water year totals for that date, but the month of April did not continue this trend. West of the Divide, only 51 percent of the normal April monthly precipitation fell causing all basins to decline. The coming months will be critical for the west-side basins as snowpack is extremely below average in some locations.

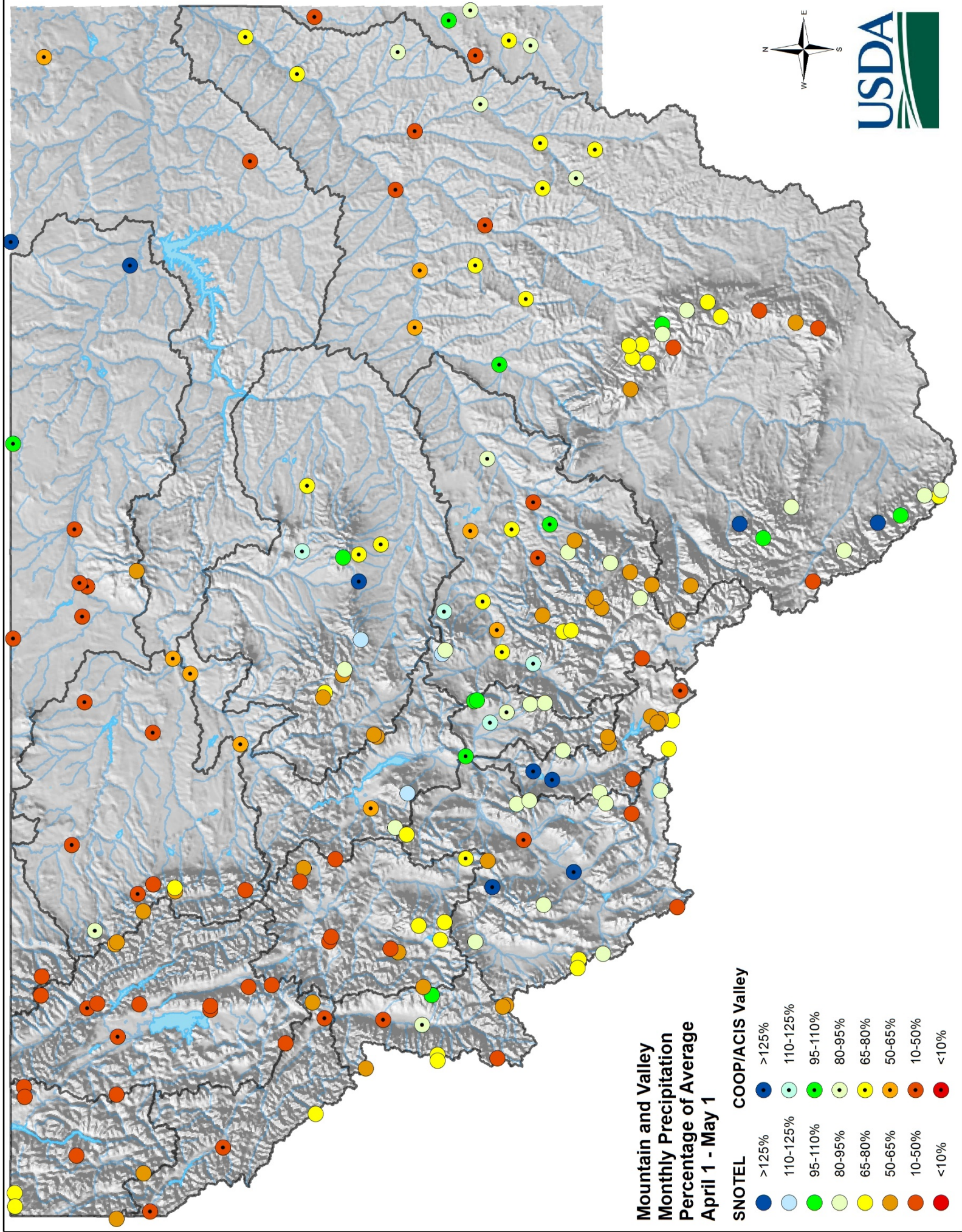
The months of April, May and June are historically favored for precipitation east of the Divide, but the basins did not receive normal precipitation this month. East of the Divide basins received 75 percent of their normal monthly precipitation during the month, but some of the northern basins (St. Mary-Milk, Sun-Teton-Marias) more closely resembled the west-side receiving well below average precipitation. In general, the further south you are in the state the lower the water-year-to-date precipitation values are. The southwest corner of the state in the Beaverhead, Ruby and Madison River basins experienced another month of well below normal precipitation. In this area where the snowpack is extremely below average a change to a wetter pattern would be welcome by irrigators this spring and summer.

Changes in precipitation patterns can happen rapidly as they did in 2011 (not that we want THAT much precipitation all at once), and considering the lack of snowpack in many basins it will be needed to supplement the flows in our streams this runoff season.

State-wide precipitation for the month of April was 65 percent of normal, and is currently 94 percent of the water year-to-date average for May 1st.

<i>Precipitation</i>			
<i>5/1/2015</i>	Monthly % Avg	Water Year % Avg	WY % Last Year
Columbia River Basin	51%	99%	89%
Kootnenai in Montana	51%	98%	97%
Flathead in Montana	41%	103%	92%
Upper Clark Fork	54%	94%	82%
Bitterroot	64%	102%	83%
Lower Clark Fork	51%	99%	93%
Missouri River Basin	74%	88%	77%
Jefferson	73%	82%	75%
Madison	73%	74%	65%
Gallatin	87%	91%	74%
Headwaters Mainstem	74%	94%	73%
Smith-Judith-Musselshell	81%	91%	77%
Sun-Teton-Marias	52%	101%	88%
St. Mary-Milk	60%	109%	105%
Yellowstone River Basin	75%	85%	66%
Upper Yellowstone	74%	89%	66%
Lower Yellowstone	74%	81%	66%
East of Divide	73%	87%	73%
West of Divide	51%	99%	89%
Montana State-Wide	65%	94%	82%





Reservoirs

State-wide snowpack may be in poor shape for May 1st, but reservoir storage is the silver lining to this year's water story, and is above average for the date. This is due in large part to carryover storage from last year when snowpack provide ample runoff and water users had less demand on reservoirs for irrigation. West of the Divide where precipitation fell in the form of rain this winter in place of snow, water managers have been able to add to reservoir contents by storing this water as it entered the river systems. Since snowpack across the state is well below normal and will contribute less water to our rivers this year reservoirs will play a large role in the delivery of water, as will future precipitation during the summer.

As water demand increases later in the spring and summer due to below normal snowpack contribution to annual runoff future reservoir contents could change from above average to below depending on water usage. It is important for water users to remember wise management of reservoirs will not only be important to this year, but next year as well.

State-wide reservoir storage is currently 122 percent of average for May 1st, and 120 percent of last year at this time.

<i>Reservoir Storage</i>		
<i>5/1/2015</i>	Current % Avg	Current % LY
Columbia River Basin	139%	130%
Kootenai in Montana	158%	136%
Flathead in Montana	127%	126%
Upper Clark Fork	111%	110%
Bitterroot	151%	126%
Lower Clark Fork	104%	100%
Missouri River Basin	116%	116%
Jefferson	91%	115%
Madison	117%	108%
Gallatin	121%	170%
Headwaters Mainstem	116%	116%
Smith-Judith-Musselshell	152%	115%
Sun-Teton-Marias	120%	124%
St. Mary-Milk	298%	148%
Yellowstone River Basin	110%	117%
Upper Yellowstone	106%	112%
Lower Yellowstone	110%	117%
East of Divide	116%	116%
West of Divide	139%	130%
Montana State-Wide	122%	120%

Streamflow

It should be no surprise to water users in the state that the snowpack this year has been less than disappointing. Since snowmelt plays such a large role in our spring runoff, snowmelt contributions to streamflow will be well below average this spring/summer. Many forecasts in the Montana basins are well below average for this date, in some cases we could see near record low streamflows if warm and dry weather patterns persist.

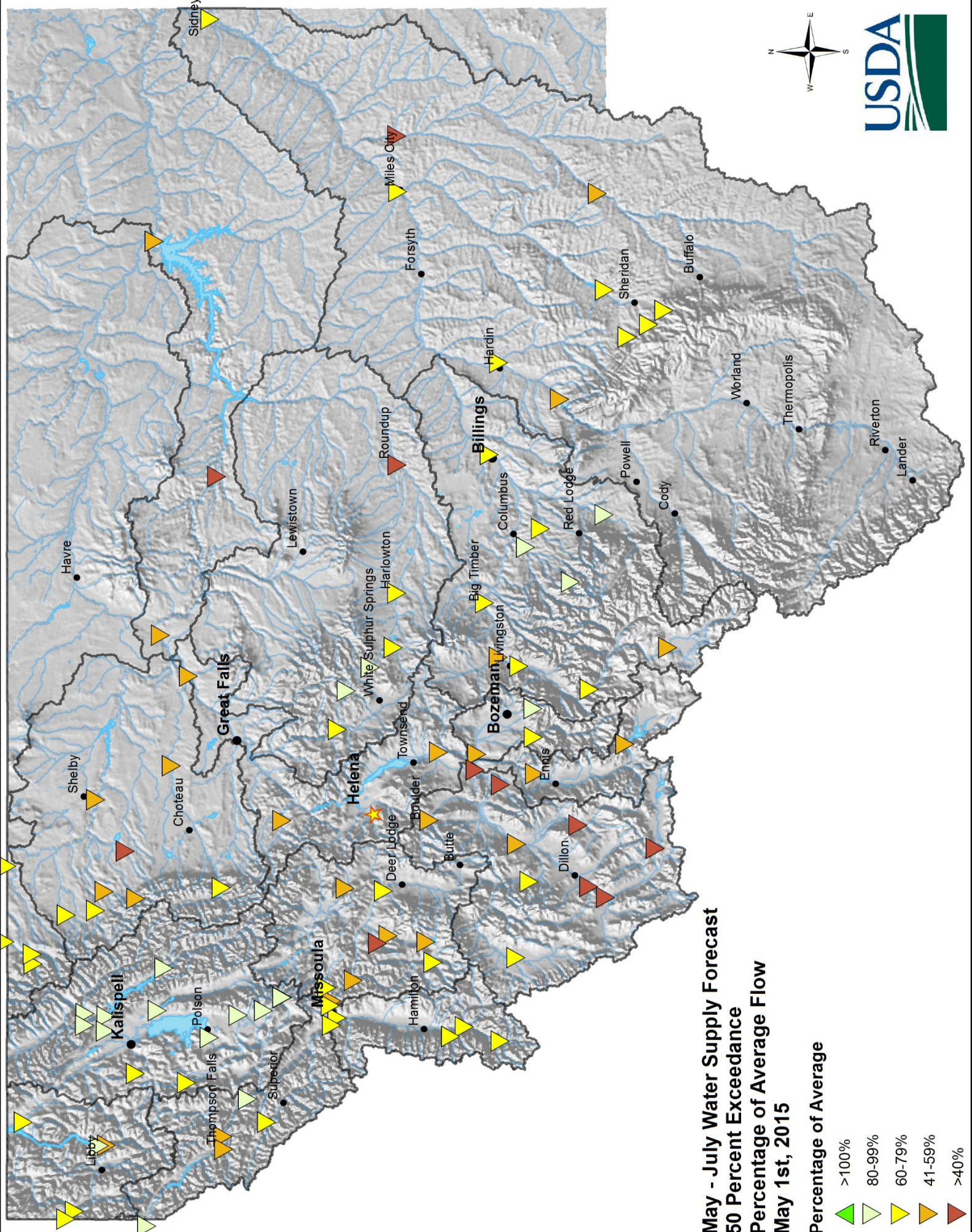
Streamflow forecasts within individual basin reports are presented as a range forecast. Water users should be aware of how to interpret these forecasts, as you can make multiple management decisions. For example, a 70 or 90 percent exceedance forecast indicates this should occur 70 or 90 percent of the time and could be used if you would like to make the most conservative water management decisions. If below normal precipitation occurs in the coming months this scenario would be more likely as a 50 percent forecast anticipate average precipitation during the period. On the other hand, a 10 or 30 percent forecast represents the high end of runoff and could be used for more optimistic decisions, or if anomalously wet conditions occur. 50 percent exceedance forecasts could be considered the most likely scenario, but considering the overall range of the forecasts for an individual point is important to understand the possible outcomes.

Please consult the individual basin reports for a more comprehensive guide to individual basin conditions as they can vary widely this water year. State-wide streamflow forecasts for the May-July time period are currently 69 percent of average, and 50 percent of what occurred last year.

Following are streamflow forecasts for the period April 1 through July 31. **THE FIGURES IN THE TABLE BELOW ARE AN AVERAGE OF ALL FORECASTS WITHIN THE PARTICULAR BASIN AT THE 50 PERCENT EXCEEDANCE ONLY. ALL 50 PERCENT EXCEEDANCE FORECASTS ASSUME NEAR NORMAL WEATHER THROUGH THE END OF THE FORECAST PERIOD.**

FOR FORECASTS ABOVE AND BELOW THE 50 PERCENT EXCEEDANCE, LOOK TO THE SPECIFIC BASIN REPORTS.

<i>May-July Streamflow</i>		
<i>5/1/2015</i>	% Average	% Last Year
Columbia River Basin	80%	59%
Kootnenai in Montana	80%	70%
Flathead in Montana	87%	60%
Upper Clark Fork	60%	42%
Bitterroot	70%	42%
Lower Clark Fork	77%	46%
Missouri River Basin	47%	39%
Jefferson	42%	36%
Madison	50%	52%
Gallatin	59%	50%
Headwaters Mainstem	46%	38%
Smith-Judith-Musselshell	65%	44%
Sun-Teton-Marias	58%	40%
St. Mary	75%	52%
Yellowstone River Basin	67%	45%
Upper Yellowstone	74%	51%
Lower Yellowstone	63%	40%
East of Divide	56%	42%
West of Divide	80%	59%
Montana State-Wide	69%	50%



SWSI

The Surface Water Supply Index (SWSI) is a measure of available surface water availability for the spring and summer months. Water users that rely on mountain precipitation can use the index to evaluate seasonal surface water supplies. The SWSI accounts for mountain snowpack, mountain precipitation, streamflow, reservoir storage, and soil moisture.

Watershed	This month's SWSI	Last Year's SWSI
Marias above Tiber Reservoir	-2.7	1.8
Tobacco	-2.7	1.6
Kootenai Ft. Steele to Libby Dam	-0.9	1.0
Kootenai below Libby Dam	2.1	1.8
Fisher	-3.3	1.4
Yaak	-2.4	1.3
North Fk. Flathead	-2.5	1.8
Middle Fk. Flathead	-1.5	1.9
South Fk. Flathead	2.7	3.0
Flathead at Columbia Falls	0.2	1.8
Swan	-0.7	2.9
Flathead at Polson	-1.6	2.1
Mission Valley	-0.3	-1.7
Little Bitterroot	-0.9	3.5
Clark Fork above Milltown	-2.5	2.3
Blackfoot	-3.1	2.7
Clark Fork above Missoula	-2.9	2.7
Bitterroot	-2.5	2.5
Clark Fork River below Bitterroot	-2.8	2.6
Clark Fork River below Flathead	-2.0	2.3
Beaverhead	-3.1	-1.9
Ruby	-4.0	-0.5
Big Hole	-1.1	2.1
Boulder (Jefferson)	-2.4	2.1
Jefferson	-3.3	1.9
Madison	-3.8	0.7
Gallatin	-2.9	2.4
Missouri above Canyon Ferry	-3.6	1.9
Missouri below Canyon Ferry	-3.3	0.8
Smith	-0.8	2.4
Sun	-2.2	1.2
Teton	-1.0	1.9
Birch/Dupuyer Creeks	-0.7	-0.8
Marias	-0.4	2.7
Musselshell	-0.2	2.6
Missouri above Fort Peck	-0.9	0.4
Missouri below Fort Peck	-0.9	-0.1
Milk		
Dearborn near Craig	-2.7	2.0
Yellowstone above Livingston	-2.5	3.1
Shields	-2.4	2.6
Boulder (Yellowstone)	-2.9	3.5
Stillwater	-1.6	3.0
Rock/Red Lodge Creeks	-1.3	2.9
Clarks Fork Yellowstone	-1.8	3.4
Yellowstone above Bighorn River	-2.3	3.0
Bighorn below Bighorn Lake	-0.7	2.2
Little Bighorn	-1.8	2.5
Yellowstone below Bighorn	-1.6	2.5
Tongue	-1.4	2.7
Powder	-2.5	2.7
Upper Judith	-1.4	1.1
Saint Mary	-2.2	1.8

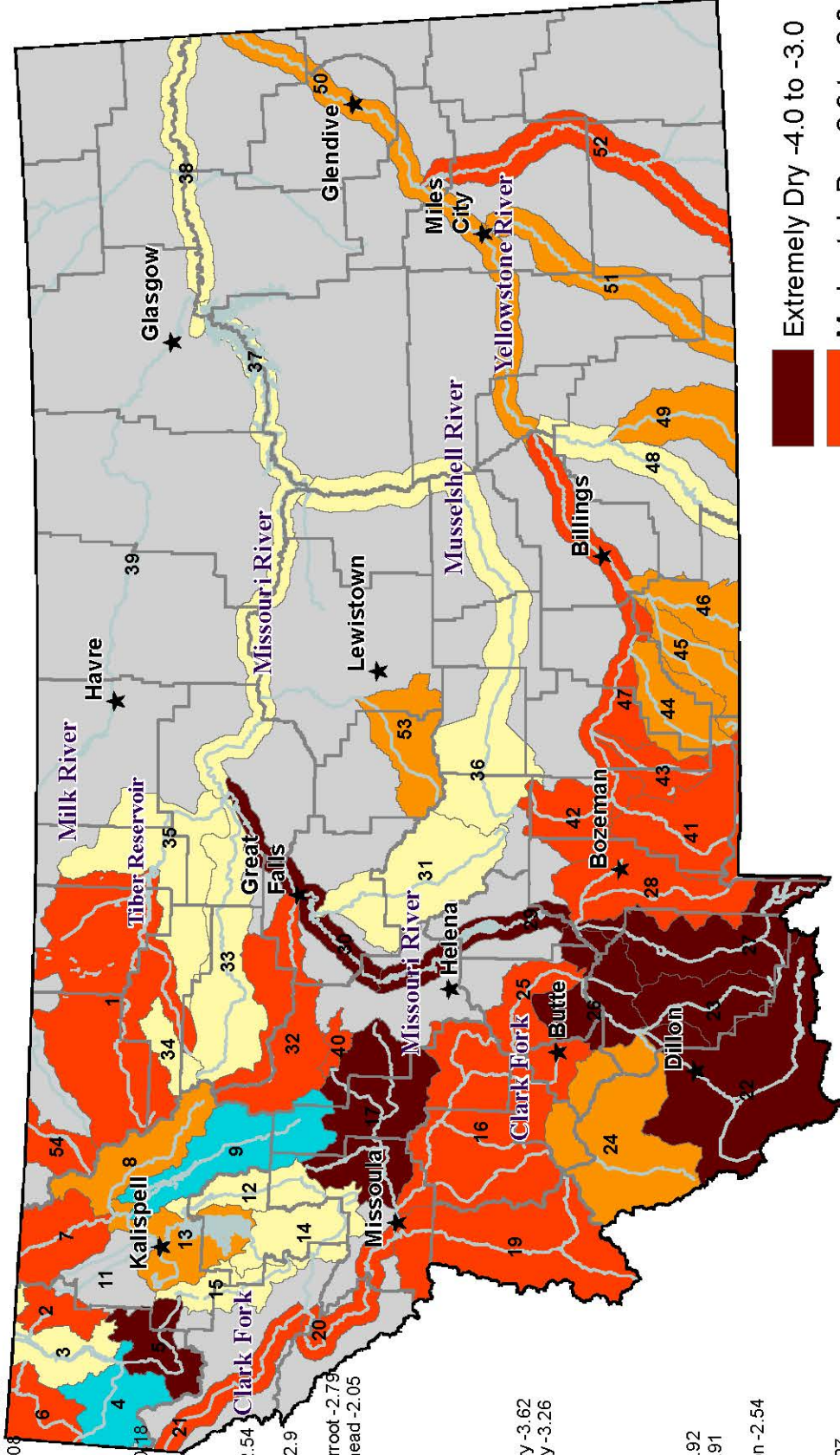
SWSI Scale

+3.0 to +4.0	Extremely Wet
+2.0 to +2.9	Moderately Wet
+1.0 to +1.9	Slightly Wet
+0.9 to -0.9	Near Average
-1.0 to -1.9	Slightly Dry
-2.0 to -2.9	Moderately Dry
-3.0 to -4.0	Extremely Dry

RIVER INDEX & SWSI VALUES

- 1 Marias above Tiber Reservoir -2.72
- 2 Tobacco -2.72
- 3 Kootenai Ft. Steele to Libby Dam -0.91
- 4 Kootenai below Libby Dam 2.08
- 5 Fisher -3.26
- 6 Yaak -2.36
- 7 North Fk. Flathead -2.54
- 8 Middle Fk. Flathead -1.45
- 9 South Fk. Flathead 2.72
- 10 Flathead at Columbia Falls 0.18
- 11 Kalispell 8
- 12 Swan -0.72
- 13 Flathead at Polson -1.63
- 14 Mission Valley -0.25
- 15 Little Bitterroot -0.87
- 16 Clark Fork above Milltown -2.54
- 17 Blackfoot -3.08
- 18 Clark Fork above Missoula -2.9
- 19 Bitterroot -2.54
- 20 Clark Fork River below Bitterroot -2.79
- 21 Clark Fork River below Flathead -2.05
- 22 Beaverhead -3.08
- 23 Ruby -3.99
- 24 Big Hole -1.09
- 25 Boulder (Jefferson) -2.36
- 26 Jefferson -3.29
- 27 Madison -3.8
- 28 Gallatin -2.9
- 29 Missouri above Canyon Ferry -3.62
- 30 Missouri below Canyon Ferry -3.26
- 31 Smith -0.83
- 32 Sun -2.17
- 33 Teton -0.99
- 34 Birch/Dupuyer Creeks -0.72
- 35 Marias -0.36
- 36 Musselshell -0.18
- 37 Missouri above Fort Peck -0.92
- 38 Missouri below Fort Peck -0.91
- 40 Dearborn near Craig -2.72
- 41 Yellowstone above Livingston -2.54
- 42 Shields -2.41
- 43 Boulder (Yellowstone) -2.9
- 44 Stillwater -1.63
- 45 Rock/Red Lodge Creeks -1.27
- 46 Clarks Fork Yellowstone -1.81
- 47 Yellowstone above Bighorn River -2.26
- 48 Bighorn below Bighorn Lake -0.72
- 49 Little Bighorn -1.81
- 50 Yellowstone below Bighorn -1.57
- 51 Tongue -1.45
- 52 Powder -2.54
- 53 Upper Judith -1.4
- 54 Saint Mary -2.17

Surface Water Supply Index (SWSI) Values



May 1, 2015

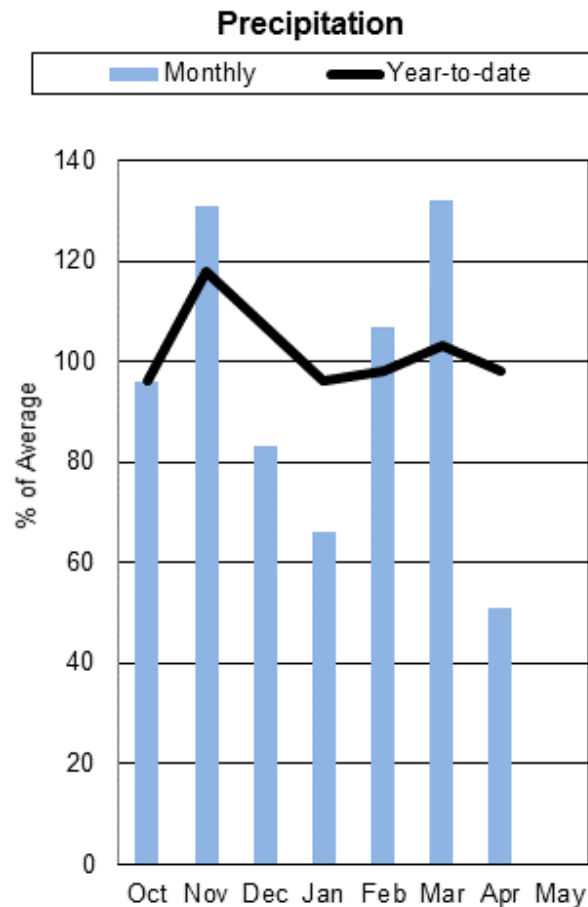
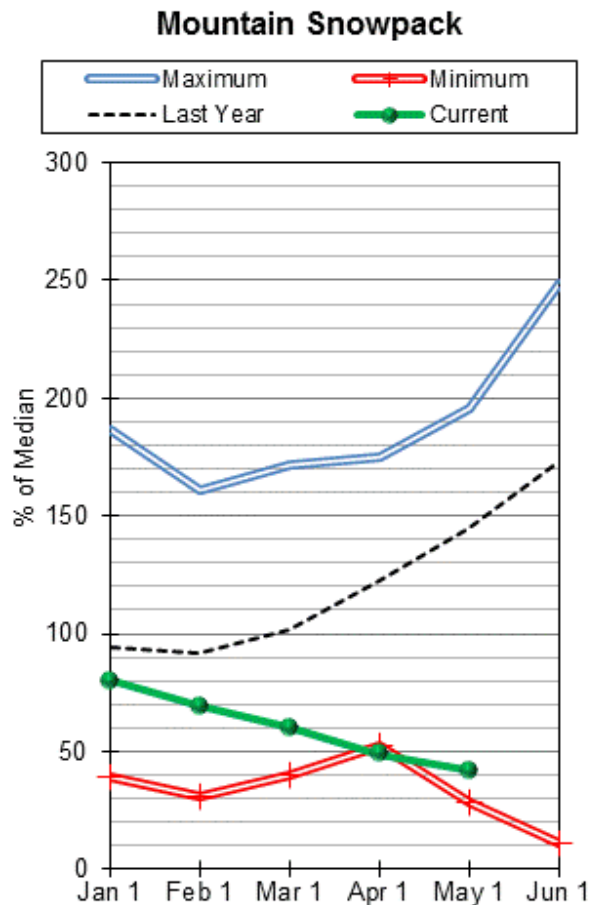


United States Department of Agriculture
Natural Resources Conservation Service

NOTE: Data used to generate
this map are **PROVISIONAL** and
SUBJECT TO CHANGE.



Kootenai River Basin in Montana



April 1st marked the day that the Kootenai River basin in Montana transitioned into its lowest basin-wide snowpack on record. As of May 1st, at the southern end of the basin, Hand Creek SNOTEL (5035 ft), Poorman Creek SNOTEL (5100 ft), and Bear Mountain SNOTEL (5400 ft) had the lowest snowpack on record in over 30 years. The Kootenai in Montana is fairing slightly better in its northern portions. Hawkins Lake SNOTEL (6450 ft) near the Canadian border is currently at 75 percent of normal and the Kootenai River basin Snow Courses in Canada are currently at 81 percent of normal. Peaking on March 26th at 14.5 inches the basin in Montana is currently at 61 percent of melt-out. Overall, the basin is at 42 percent of normal snowpack for May 1st, and 29 percent of last year at this time.

The Kootenai River basin has received near average precipitation this water year, unfortunately much of it came in the form of rain rather than snow. The month of April in the Kootenai didn't follow this year's trend and only received 51 percent of its April monthly average. January was previously this water year's lowest monthly percent of average at 96 percent. Currently on May 1st, the Kootenai River basin is 98 percent of the water year-to-date average and is 97 percent of last year at this time.

Basin-wide reservoir storage is currently at 158 percent of average for May 1st, and 136 percent of average of last year at this time.

The basin-wide average May-July streamflow forecast for the Kootenai River is currently at 80 percent of average and 70 percent of last year. Due to the high variability of percentages in the forecasts please see the table below for individual river basins.

Kootenai River Basin In Montana Streamflow Forecasts - May 1, 2015

Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast

KOOTENAI RIVER BASIN in MONTANA	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Tobacco R nr Eureka	MAY-JUL	40	56	67	66%	77	93	101
	MAY-SEP	44	62	75	66%	88	106	114
Libby Reservoir Inflow ¹	MAY-JUL	3590	4190	4460	93%	4730	5330	4820
	MAY-SEP	4420	5050	5340	93%	5630	6260	5733
Fisher R nr Libby	MAY-JUL	26	49	65	48%	81	104	136
	MAY-SEP	30	55	73	49%	89	114	150
Yaak R nr Troy	MAY-JUL	131	181	215	69%	250	300	310
	MAY-SEP	137	189	225	68%	260	315	330
Kootenai R at Leona ^{1,2}	MAY-JUL	3160	4080	4500	79%	4920	5840	5730
	MAY-SEP	4130	5000	5390	80%	5780	6650	6730

1) 90% and 10% exceedance probabilities are actually 95% and 5%

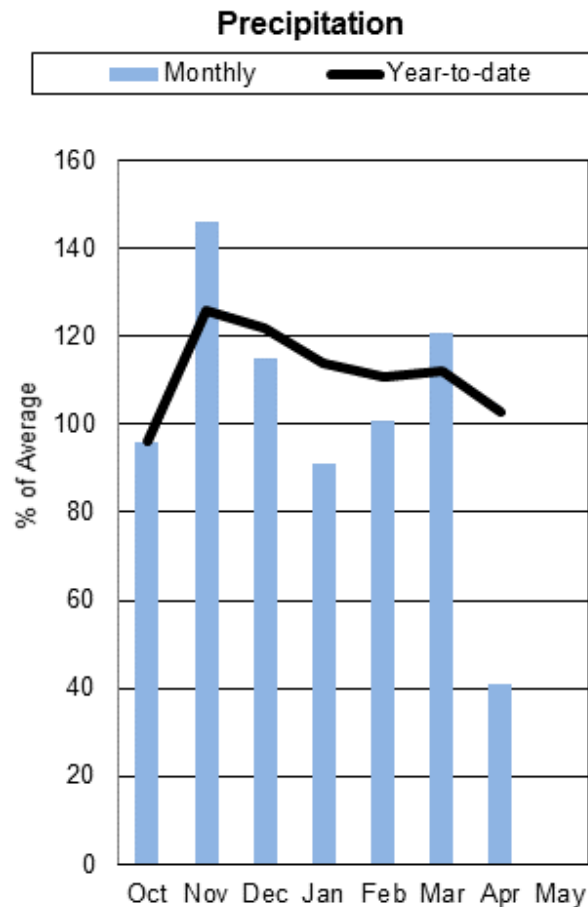
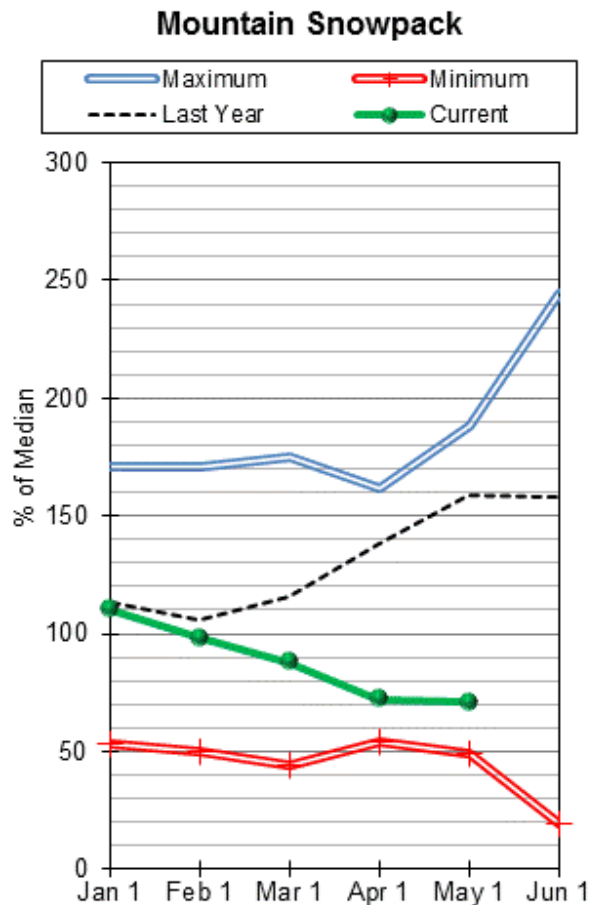
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of April, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Lake Koocanusa	4121.8	3021.5	2614.0	5748.0
Basin-wide Total	4121.8	3021.5	2614.0	5748.0
# of reservoirs	1	1	1	1

Watershed Snowpack Analysis May 1, 2015	# of Sites	% Median	Last Year % Median
KOOTENAY in CANADA	15	78%	130%
KOOTENAI MAINSTEM	3	27%	132%
TOBACCO	3	61%	146%
FISHER	5	31%	167%
YAAK	2	72%	136%
KOOTENAI RIVER BASIN in MONTANA	13	42%	145%
KOOTENAI ab BONNERS FERRY	27	63%	140%

Flathead River Basin



Similar to the rest of Montana, snow is non-existent in the lower elevations of the Flathead River basin. The basin received minor snow accumulation during the 3rd week of April, but is now well into its melt-out stage. The basin-wide snow water peak occurred around March 26th at 21.4 inches and has now seen a 19 percent reduction. As of May 1st, 21 of 31 measurements locations used in the Flathead River basin stream flow forecast are melted-out. Herrig Junction Snow Course (4850 ft) above the headwaters of the Whitefish River and Swift Creek is the lowest elevation measurement location in the basin with snow. That being said, Herrig Junction currently has the 3rd lowest snowpack in 55 years of record. Overall, the Flathead River basin is at 69 percent of normal snowpack for May 1st, and 45 percent of last year at this time.

Water year precipitation across the Flathead River basin ranges from slightly above average to slightly below average. The Mission Mountains lead at 117 percent of the water year-to-date average, while the Stillwater River basin is lowest at 91 percent. Water year to-date averages fell slightly from last month due to lack of precipitation in April. Basin-wide the Flathead River basin received 41 percent of average precipitation in April. Currently on May 1st, the Flathead River basin is 103 percent of the water year-to-date average and is 92 percent of last year at this time.

Basin-wide reservoir storage is currently at 127 percent of average for May 1st, and 126 percent of average of last year at this time.

The basin-wide average May-July streamflow forecast for the Flathead River is currently at 87 percent of average and 60 percent of last year. Due to the high variability of percentages in the forecasts please see the table below for individual river basins.

Flathead River Basin

Streamflow Forecasts - May 1, 2015

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

FLATHEAD RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
NF Flathead R nr Columbia Falls	MAY-JUL	900	1010	1090	83%	1170	1280	1320
	MAY-SEP	1020	1150	1240	84%	1330	1450	1480
MF Flathead R nr West Glacier	MAY-JUL	925	1050	1140	88%	1230	1370	1300
	MAY-SEP	1030	1170	1270	89%	1370	1510	1430
Sf Flathead R nr Hungry Horse	MAY-JUL	770	855	915	90%	975	1070	1020
	MAY-SEP	825	920	985	90%	1050	1140	1100
Hungry Horse Reservoir Inflow ^{1,2}	MAY-JUL	1130	1330	1430	91%	1520	1730	1580
	MAY-SEP	1210	1440	1540	91%	1640	1870	1690
Flathead R at Columbia Falls ²	MAY-JUL	3150	3500	3730	87%	3970	4320	4290
	MAY-SEP	3500	3880	4140	88%	4400	4790	4720
Ashley Ck nr Marion ²	MAY	0.87	1.5	1.92	74%	2.4	3	2.6
	MAY-JUL	1.52	2.5	3.1	79%	3.7	4.7	3.9
Swan R nr Bigfork	MAY-JUL	360	400	425	98%	455	495	435
	MAY-SEP	420	465	500	98%	530	575	510
Flathead Lake Inflow ^{1,2}	MAY-JUL	3350	3980	4260	86%	4550	5170	4940
	MAY-SEP	3650	4370	4690	87%	5020	5730	5400
Mill Ck ab Bassoo ck nr Niarada	MAY-JUL	0.55	1.32	1.85	64%	2.4	3.2	2.9
	MAY-SEP	0.8	1.6	2.1	66%	2.7	3.5	3.2
South Crow Ck nr Ronan	MAY-JUL	6.6	7.8	8.6	93%	9.4	10.6	9.2
	MAY-SEP	7.7	9	9.9	93%	10.8	12.1	10.6
Mission Ck nr St. Ignatius	MAY-JUL	19.3	21	23	96%	24	26	24
	MAY-SEP	23	25	27	93%	29	31	29
SF Jocko R nr Arlee	MAY-JUL	18.9	22	24	83%	26	30	29
	MAY-SEP	21	25	27	82%	29	33	33
NF Jocko R bl Tabor Feeder Canal	MAY-JUL	19.8	22	23	82%	24	26	28
	MAY-SEP	22	24	25	83%	27	29	30

1) 90% and 10% exceedance probabilities are actually 95% and 5%

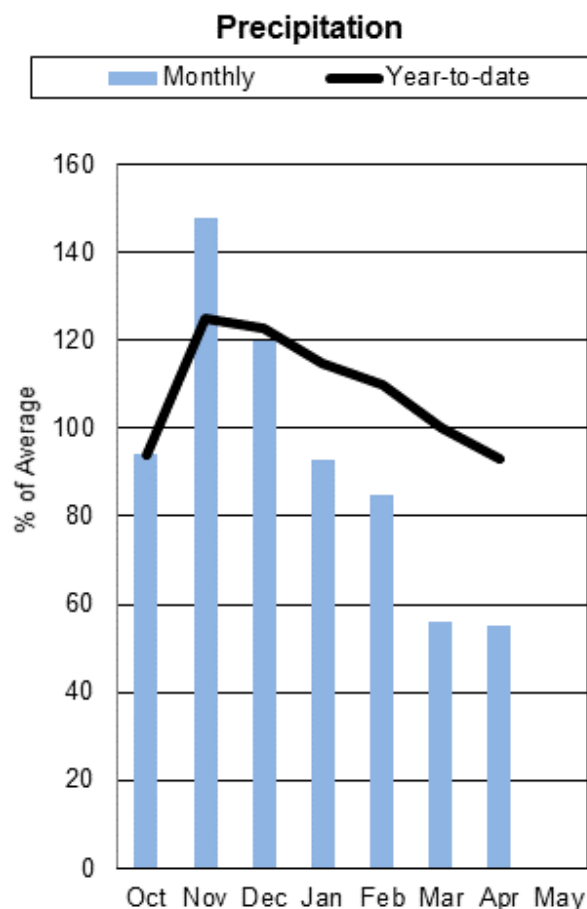
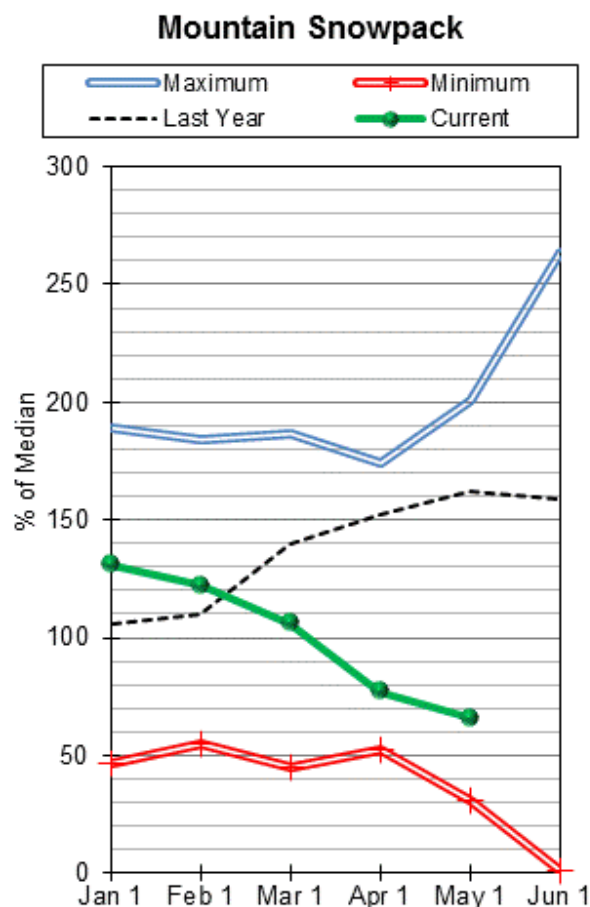
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of April, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Camas (4)	40.0	36.8	26.9	45.2
Lower Jocko Lake	1.7	0.4	0.8	6.4
Mission Valley (8)	35.7	26.0	40.1	100.0
Hungry Horse Lake	2941.0	2091.9	2188.0	3451.0
Flathead Lake	1072.8	1101.8	971.5	1791.0
Basin-wide Total	4091.2	3256.8	3227.3	5393.6
# of reservoirs	5	5	5	5

Watershed Snowpack Analysis May 1, 2015	# of Sites	% Median	Last Year % Median
NF FLATHEAD in CANADA	2	0%	171%
NF FLATHEAD in MONTANA	8	65%	142%
MIDDLE FORK FLATHEAD	4	65%	154%
SOUTH FORK FLATHEAD	6	77%	147%
STILLWATER-WHITEFISH	9	64%	174%
SWAN	6	86%	141%
MISSION VALLEY	4	79%	152%
LITTLE BITTERROOT-ASHLEY	5	0%	334%
JOCKO	4	82%	150%
FLATHEAD in MONTANA	32	69%	155%
FLATHEAD RIVER BASIN	34	67%	156%

Upper Clark Fork River Basin



April was not a kind month to the snowpack in the Upper Clark Fork River basin. Percentages dropped off significantly as the month progressed with all of the low elevation sites melting out relatively early compared to average. Mid-month a storm hit most of the sub-basins cooling temperatures to allow for some increase in snow water equivalents at the higher elevations. Another storm occurred towards the end of the month which brought rain and snow to all elevations in the upper reaches of the basin. It was short lived and soon after temperatures warmed back up and strong melt returned. Snowpack ranges from 54 percent of normal in the Rock Creek Drainage to 72 percent of average in the Blackfoot Drainage. Snowpack in the Clark Fork reaches above Flint Creek came in at 71 percent of normal. Basin-wide snowpack in the Upper Clark Fork River basin as of May 1st is 68 percent of normal and 42 percent of last year at this time.

April “showers” consisted of two storms mid-month and towards the end of the month and neither one of these were gully washers but appreciated none the less! April mountain precipitation ranged from 42 percent of average in the Blackfoot Drainage to 68 percent in the Rock Creek drainage. Valley weather stations received 82 percent of monthly average precipitation for April, while mountain SNOTEL sites received only 72 percent. Currently on May 1st, the Upper Clark Fork River Basin is 93 percent of the water year-to-date average, and 81 percent of last year at this time.

Basin-wide reservoir storage is currently at 111 percent of average for May 1st, and 110 percent of average of last year at this time.

The basin-wide average May-July streamflow forecast for the Upper Clark Fork River is currently at 60 percent of average and 42 percent of last year. Due to the high variability of percentages in the forecasts please see the table below for individual river basins.

Upper Clark Fork River Basin Streamflow Forecasts - May 1, 2015

Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast

UPPER CLARK FORK RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Little Blackfoot nr Garrison	MAY-JUL	16.7	27	35	63%	44	59	56
	MAY-SEP	19.6	31	40	63%	50	67	63
Flint Ck nr Southern Cross	MAY-JUL	2.4	4	5.3	50%	6.9	9.4	10.5
	MAY-SEP	2.6	4.5	6.2	49%	8.1	11.4	12.7
Flint Ck bl Boulder Ck	MAY-JUL	13.5	20	26	58%	32	43	45
	MAY-SEP	20	29	36	61%	44	56	59
Lower Willow Ck Reservoir Inflow ²	MAY	0.66	1.27	1.8	36%	2.4	3.5	5
	MAY-JUL	1.13	2.2	3	35%	4.1	5.9	8.5
MF Rock Ck nr Philipsburg	MAY-JUL	15.6	26	34	64%	41	52	53
	MAY-SEP	19.8	31	39	65%	47	59	60
Rock Ck nr Clinton	MAY-JUL	41	91	125	57%	159	210	220
	MAY-SEP	57	111	148	59%	185	240	250
Clark Fork R ab Milltown	MAY-JUL	15.7	152	245	55%	340	475	445
	MAY-SEP	48	198	300	57%	400	550	530
Nevada Ck nr Helmville	MAY	1.17	1.74	2.2	42%	2.7	3.6	5.2
	MAY-JUL	2.1	3.7	5	45%	6.5	9.2	11
Blackfoot R nr Bonner	MAY-JUL	235	315	375	64%	430	510	590
	MAY-SEP	285	375	435	64%	500	585	675
Clark Fork R ab Missoula	MAY-JUL	275	485	625	61%	770	980	1030
	MAY-SEP	360	585	740	62%	895	1120	1200

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

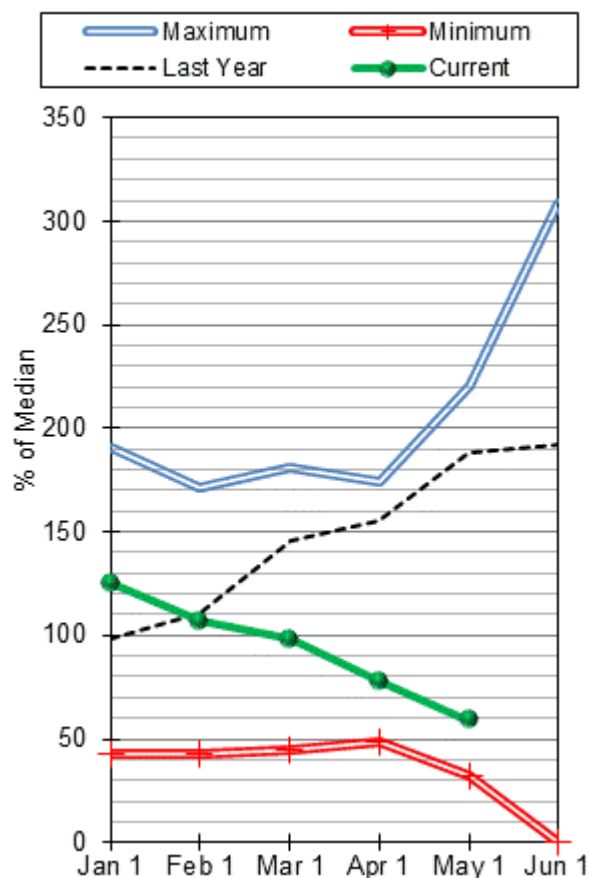
3) Median value used in place of average

Reservoir Storage End of April, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
East Fork Rock Creek Res	11.9	10.2	9.2	15.6
Georgetown Lake	29.0	26.8	28.2	31.0
Lower Willow Creek Reservoir	5.0	4.7	4.1	4.9
Nevada Creek Res	11.2	10.4	9.9	12.6
Basin-wide Total	57.1	52.2	51.4	64.1
# of reservoirs	4	4	4	4

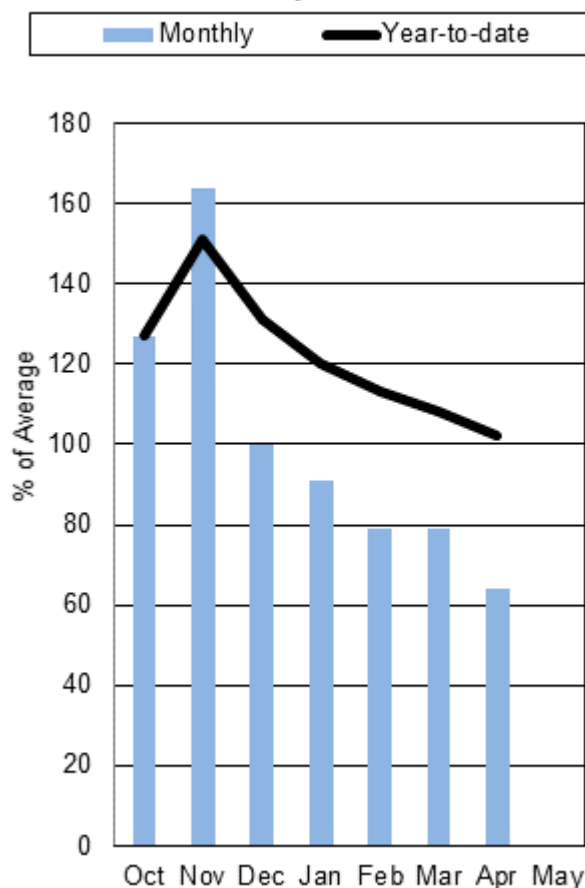
Watershed Snowpack Analysis May 1, 2015	# of Sites	% Median	Last Year % Median
CLARK FORK ab FLINT CREEK	12	71%	168%
FLINT CREEK	5	56%	164%
ROCK CREEK	5	54%	144%
CLARK FORK ab BLACKFOOT	20	63%	162%
BLACKFOOT	13	72%	172%
UPPER CLARK FORK RIVER BASIN	31	66%	162%

Bitterroot River Basin

Mountain Snowpack



Precipitation



April turned out to be May in terms of snowpack conditions in the Bitterroot Basin. Snow melt that started to occur the end of March continued throughout April. Fortunately, a storm hit the area mid-month slowed down this melt pattern and the SNOTEL sites within the basin even showed an increase in snow water equivalent. However this was short lived as temperatures returned to above normal and the snow melt continued until the end of the month when another storm brought cooler temperatures and again a slight increase in snow water equivalent at the higher elevations. The exposed burned areas as well as the low elevation valley areas lost any snowpack early in April. Remaining snowpack as of May 1st is 59 percent of normal and 31 percent of last year at this time.

April precipitation for the basin was nothing to write home about either with only two storms hitting the basin throughout the month. SNOTEL sites in the West Fork of the Bitterroot are 52 percent of average for April precipitation. SNOTEL sites in the East and West sides of the basin fared a little better at 67 percent of normal. Basin-wide April mountain precipitation is 64 percent of normal. Valley stations were not favored for precipitation either in April with 53 percent of the monthly average and 142 percent of last year. Basin wide water year-to-date precipitation is currently 102 percent of average for May 1st and 83 percent of last year.

Basin-wide reservoir storage is currently at 151 percent of average for May 1st, and 126 percent of average of last year at this time.

The basin-wide average May-July streamflow forecast for the Bitterroot River is currently at 70 percent of average and 42 percent of last year.

Bitterroot River Basin Streamflow Forecasts - May 1, 2015

Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast

BITTERROOT RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
WF Bitterroot R Nr Conner ²	MAY-JUL	36	56	71	65%	85	105	109
	MAY-SEP	38	63	80	67%	97	121	120
Bitterroot R Nr Darby	MAY-JUL	145	205	245	68%	290	350	360
	MAY-SEP	195	255	300	71%	345	405	420
Como Reservoir Inflow ²	MAY-JUL	42	48	52	79%	56	61	66
	MAY-SEP	43	50	54	78%	58	65	69
Bitterroot R nr Missoula	MAY-JUL	490	615	705	71%	795	920	990
	MAY-SEP	545	690	785	72%	880	1020	1090

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

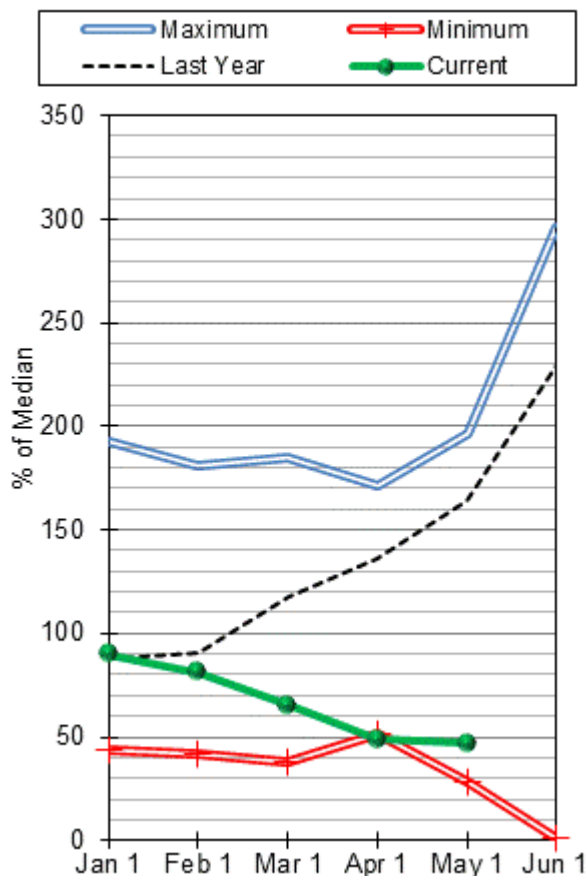
3) Median value used in place of average

Reservoir Storage End of April, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Painted Rocks Lake	32.4	29.9	18.7	31.7
Lake Como	29.4	18.9	22.1	34.9
Basin-wide Total	61.8	48.8	40.8	66.6
# of reservoirs	2	2	2	2

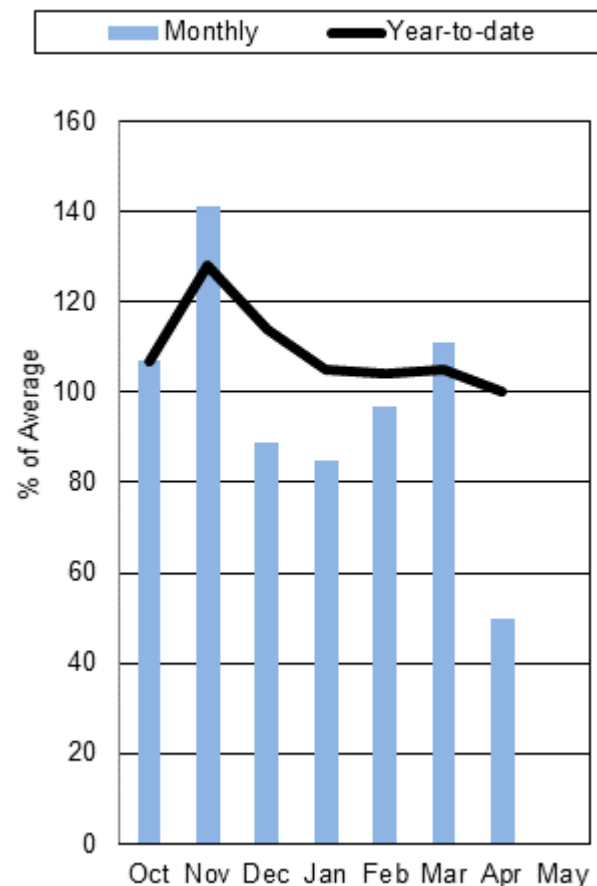
Watershed Snowpack Analysis May 1, 2015	# of Sites	% Median	Last Year % Median
WEST FORK BITTERROOT	2	74%	176%
EAST SIDE BITTERROOT	4	57%	168%
WEST SIDE BITTERROOT	3	64%	210%
BITTERROOT RIVER BASIN	8	59%	188%

Lower Clark Fork River Basin

Mountain Snowpack



Precipitation



The already below average snowpack in the Lower Clark Fork River basin continued decreasing from melt throughout the month of April. Only sites at the high elevations have measurable snowpack. A storm rolled through the basin mid-month and sites in the interior northwest portion of the basin received some snow accumulations which help to slow down the melt rates. Another storm towards the end of the month rolled through the region but was mainly a rain event. This did not help the already rapid declining snowpack. SNOTEL site Poorman Creek snow water equivalent for this year is at a new period of record minimum. As of May 1, basin-wide snowpack are 47 percent of normal and 29 percent of last year.

April mountain precipitation for the region did not bring many May flowers. Precipitation was quite variable throughout the basin mainly from the two notable storms. For the month, Lookout Pass SNOTEL site was only 28 percent of average while Hoodoo Basin was 75 percent of average. April mountain monthly basin-wide precipitation was 50 percent of average. Valley stations did not fare well in April either and ranged from 28 percent of average at Heron to 38 percent of average at the Missoula Airport. Basin-wide valley precipitation was 31 percent of average and is 33 percent of last year. Currently the basin-wide water year year-to-date precipitation is 100 percent of average for May 1st, and 94 percent of last year at this time. .

Reservoir storage in Noxon Rapids Reservoir is 104 percent of average and is 100 percent of last year.

The basin-wide average May-July streamflow forecast for the Lower Clark River is currently at 77 percent of average and 46 percent of last year. Due to the high variability of percentages in the forecasts please see the table below for individual river basins.

Lower Clark Fork River Basin Streamflow Forecasts - May 1, 2015

Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast

LOWER CLARK FORK RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Clark Fork R bl Missoula	MAY-JUL	810	1130	1350	67%	1570	1890	2030
	MAY-SEP	950	1300	1540	67%	1780	2130	2300
Clark Fork R at St. Regis ¹	MAY-JUL	925	1510	1780	67%	2050	2630	2640
	MAY-SEP	1100	1740	2030	68%	2320	2960	2990
Clark Fork R nr Plains ^{1,2}	MAY-JUL	4530	5710	6240	80%	6770	7950	7780
	MAY-SEP	5020	6360	6970	81%	7580	8920	8650
Thompson nr Thompson Falls	MAY-JUL	38	52	62	45%	73	91	138
	MAY-SEP	48	63	74	46%	86	106	161
Prospect Ck at Thompson Falls	MAY-JUL	24	30	35	46%	40	48	76
	MAY-SEP	28	35	40	48%	45	54	84
Clark Fork R at Whitehorse Rapids ^{1,2}	MAY-JUL	5130	6400	6970	80%	7540	8810	8740
	MAY-SEP	5740	7170	7820	80%	8470	9900	9760

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

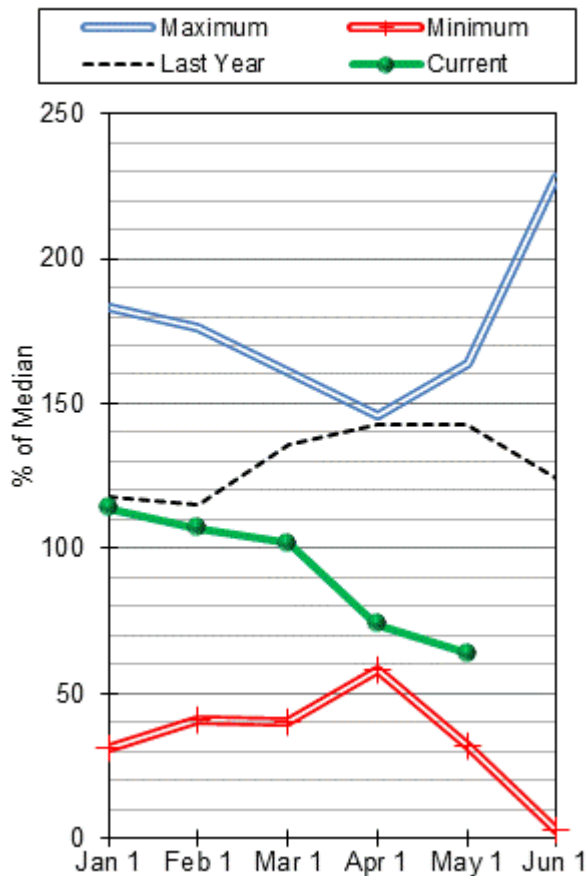
3) Median value used in place of average

Reservoir Storage End of April, 2015		Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Noxon Rapids Reservoir		318.2	318.9	307.4	335.0
Basin-wide Total		318.2	318.9	307.4	335.0
# of reservoirs		1	1	1	1

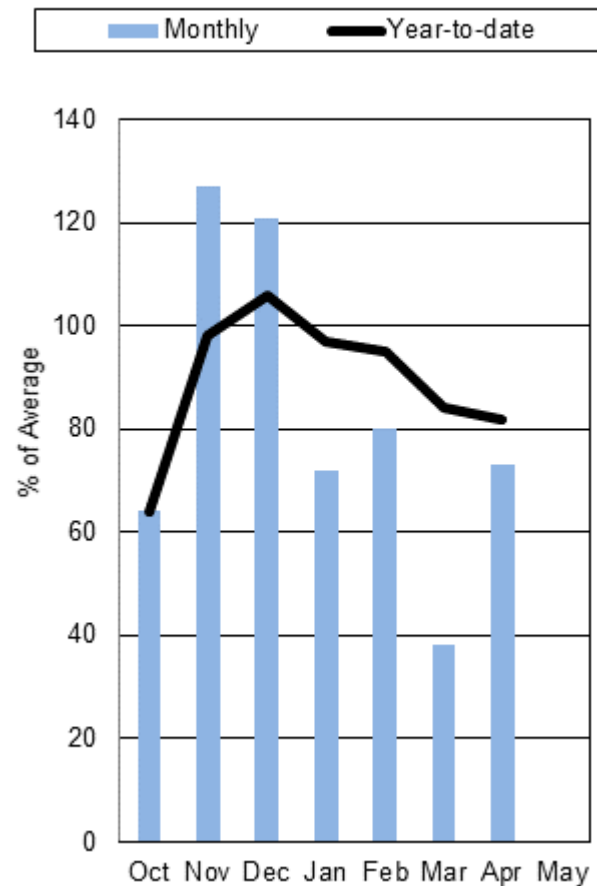
Watershed Snowpack Analysis May 1, 2015		# of Sites	% Median	Last Year % Median
LOWER CLARK FORK RIVER BASIN		11	47%	164%

Jefferson River Basin

Mountain Snowpack



Precipitation



The southern and eastern halves of the Jefferson River basin are experiencing some of the lowest snowpack levels since snow surveys began in the mid to late 1960's. The headwaters of the Beaverhead and Ruby River basins experienced extremely low snowfall total this winter and experienced substantial melt during the months of March and April. Currently the snowpack in both the Ruby and Beaverhead River basins is 55 percent of normal for May 1st. In these basins, the low elevation snowpack had melted out between April 1st and May 1st, and the higher elevation snowpacks began active melt at the end of April. Snowmelt contribution to streamflows will be well below normal this runoff season, and spring precipitation will be critical to the volume and timing of runoff this spring and summer.

Snowpack conditions in the basin generally improve as you move north, where the Big Hole River basin snowpack is 77 percent of normal and Boulder River basin is 79 percent of normal. Higher elevations in these basins have struggled to hold on to the snow that was received earlier in the year, but remain near to slightly below normal for May 1st. Low to mid-elevations have experienced melt during the last month and are well below normal for this date. Due to the well below normal snowpack in the headwaters basins this spring, snowmelt contributions to streamflows will be below average. Currently the Jefferson River basin snowpack as a whole is 64 percent of normal for May 1st, and 45 percent of last year at this time.

Valley weather stations received 82 percent of monthly average precipitation for April, while mountain SNOTEL sites received only 72 percent. Currently on May 1st, the Jefferson River Basin is 82 percent of the water year-to-date average, and 75 percent of last year at this time.

Clark Canyon Reservoir is currently at 85 percent of average, Lima Reservoir is 99 percent of average, and Ruby Reservoir is currently at 103 percent of average. Basin-wide reservoir storage is at 91 percent of average and 115 percent of last year of last year at this time.

The basin-wide average April-July streamflow forecast for the Jefferson River is currently at 42 percent of average and 36 percent of last year. Due to the high variability of percentages in the forecasts please see the table below for individual river basins.

Jefferson River Basin Streamflow Forecasts - May 1, 2015

Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast

JEFFERSON RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Lima Reservoir Inflow ²	MAY-JUL	1	4.4	8	14%	12.9	22	57
	MAY-SEP	1	4.2	8	13%	12.7	22	64
Clark Canyon Inflow ²	MAY-JUL	-51	-35	-20	-31%	3.7	39	64
	MAY-SEP	-50	-36	-13	-16%	12.7	50	83
Beaverhead R at Barretts ²	MAY-JUL	-44	-20	-5.8	-7%	32	88	85
	MAY-SEP	-40	-17	8	7%	53	120	111
Ruby R Reservoir Inflow ²	MAY-JUL	2.5	16.2	26	39%	35	49	67
	MAY-SEP	8.6	25	36	44%	47	63	82
Big Hole R at Wisdom	MAY-JUL	3.5	30	48	64%	66	93	75
	MAY-SEP	3.4	32	52	65%	72	101	80
Big Hole R nr Melrose	MAY-JUL	235	295	335	76%	380	440	440
	MAY-SEP	260	330	375	78%	420	490	480
Jefferson R nr Twin Bridges ²	MAY-JUL	20	140	250	49%	355	515	515
	MAY-SEP	20	157	285	51%	415	605	555
Boulder R nr Boulder	MAY-JUL	16.2	27	34	57%	42	52	60
	MAY-SEP	16.5	29	37	57%	46	58	65
Willow Ck Reservoir Inflow ²	MAY-JUL	0.31	2	3.5	24%	6.7	11.4	14.4
	MAY-SEP	0.8	2.4	4.3	26%	7.7	12.7	16.8
Jefferson R nr Three Forks ²	MAY-JUL	19	61	137	24%	255	430	575
	MAY-SEP	9	70	143	23%	275	475	635

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

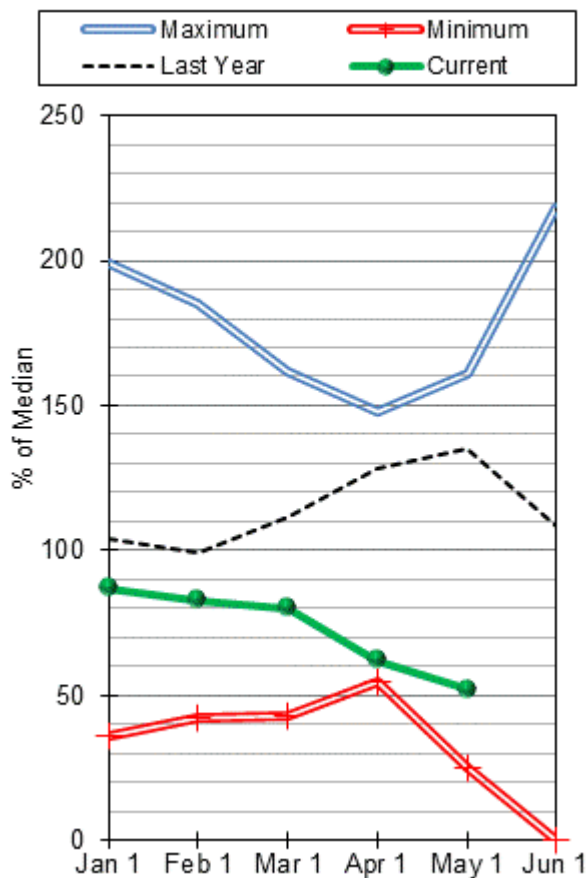
3) Median value used in place of average

Reservoir Storage End of April, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Lima Reservoir	53.8	40.4	54.4	84.0
Clark Canyon Res	119.8	106.6	141.6	255.6
Ruby River Reservoir	37.8	37.6	36.7	38.8
Basin-wide Total	211.4	184.7	232.7	378.4
# of reservoirs	3	3	3	3

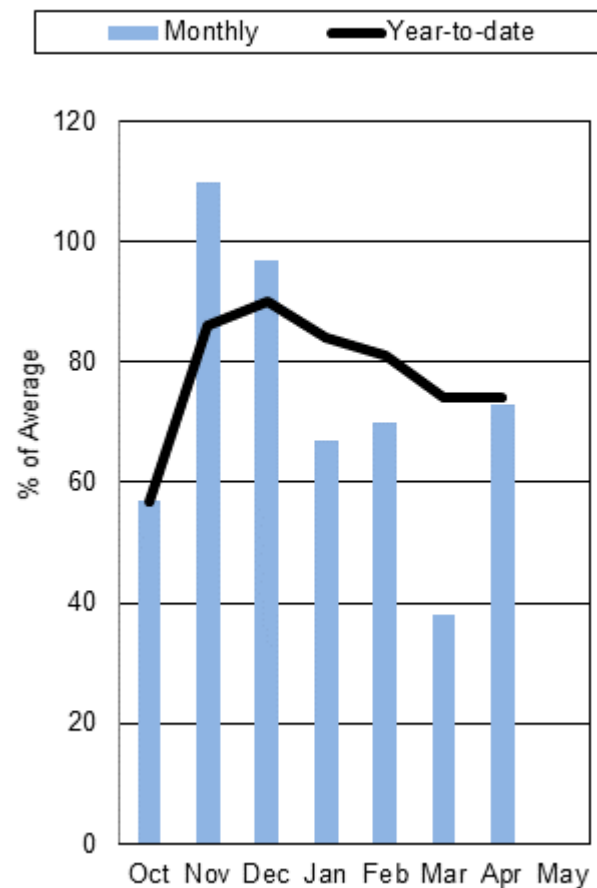
Watershed Snowpack Analysis May 1, 2015	# of Sites	% Median	Last Year % Median
BEAVERHEAD	9	55%	128%
RUBY	5	55%	131%
BIGHOLE	12	77%	155%
BOULDER	6	79%	166%
JEFFERSON RIVER BASIN	26	64%	143%

Madison River Basin

Mountain Snowpack



Precipitation



It has been an extremely disappointing snow year in the Madison River basin this year, and April wasn't any kinder with regards to snowfall. Snowpack is virtually non-existent below 7,000 feet where all snowcourses measured reported snow free for May 1st. What snow there is in the basin at the higher elevations is also well below normal for May 1st.

The abnormally warm and dry conditions that have persisted this winter since January has wreaked havoc on the snowpack. The snowpack peaked 2 to 3 weeks early in the basin, with low elevations peaking during the middle of March, and upper elevations peaking during the latter half of April. Water users in the basin should be aware that snowpack contributions to runoff will be well below normal this year, and that snowmelt is occurring ahead of schedule. Currently the greater Madison River basin is 52 percent of normal, and 39 percent of the snowpack at this time last year.

Valley weather stations received 109 percent of the average precipitation for March while mountain stations received 69 percent of average. Currently on May 1st, the Madison River Basin is 74 percent of the water year-to-date average, and 65 percent of last year at this time.

Basin reservoir storage is currently 117 percent of average for May 1st, and 108 percent of last year at this time.

The basin-wide average April-July streamflow forecast for the Madison River is currently at 50 percent of average and 49 of last year.

Madison River Basin Streamflow Forecasts - May 1, 2015

Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast

MADISON RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Hebgen Reservoir Inflow ²	MAY-JUL	102	133	154	50%	175	205	305
	MAY-SEP	159	196	220	54%	245	280	405
Ennis Reservoir Inflow ²	MAY-JUL	154	220	265	50%	310	375	530
	MAY-SEP	235	315	370	54%	420	500	680

1) 90% and 10% exceedance probabilities are actually 95% and 5%

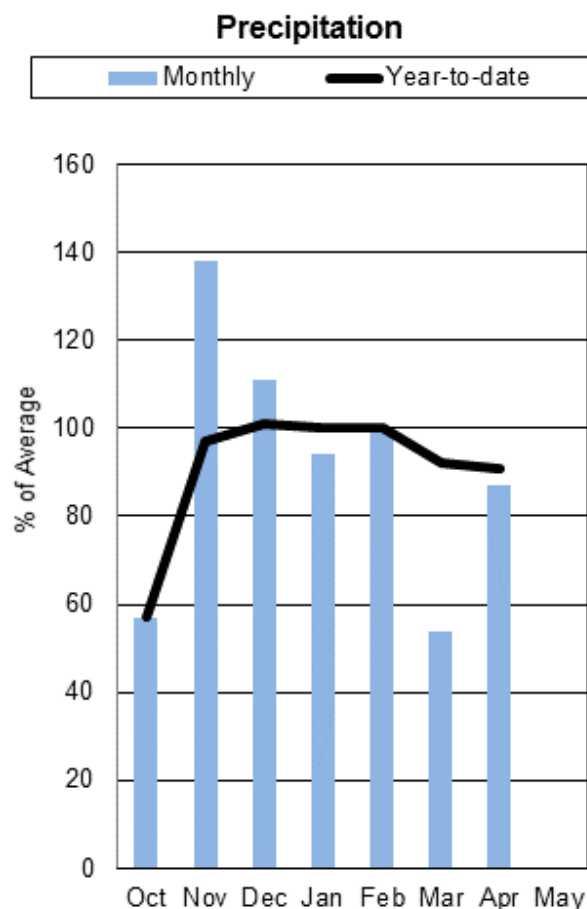
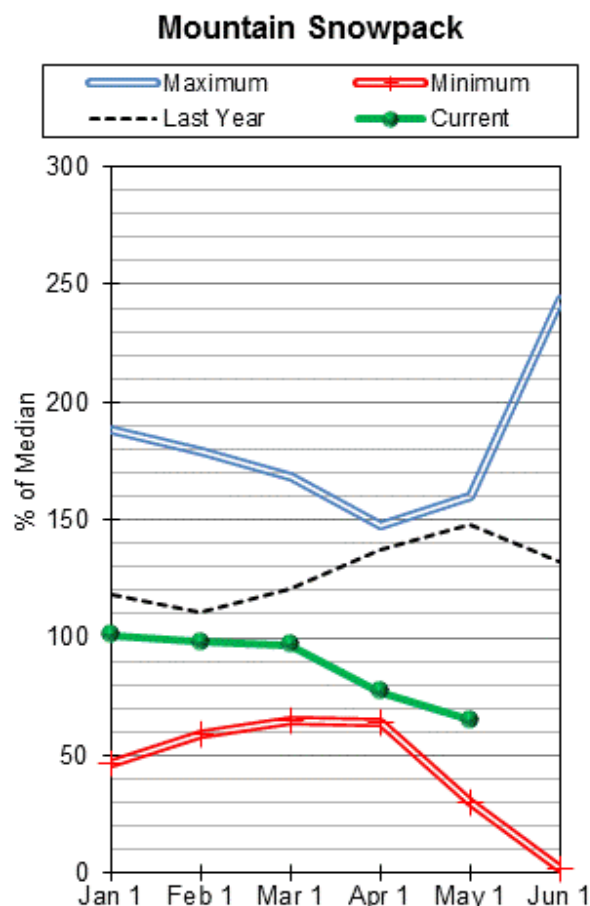
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of April, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Ennis Lake	34.3	33.2	32.4	41.0
Hebgen Lake	328.2	301.6	276.7	377.5
Basin-wide Total	362.5	334.8	309.1	418.5
# of reservoirs	2	2	2	2

Watershed Snowpack Analysis May 1, 2015	# of Sites	% Median	Last Year % Median
MADISON abv HEBGEN LAKE	5	43%	134%
MADISON blw HEBGEN LAKE	10	55%	136%
MADISON RIVER BASIN	15	50%	135%

Gallatin River Basin



The Upper and Lower Gallatin have differed substantially this year in terms of snowpack, the Upper Gallatin has been below normal all year while ranges further north have fared better in terms of snowfall through the winter and spring. Low-elevation snow courses (Twenty-One Mile, Rock Creek Meadows) in the Upper Gallatin below 7500' reported no snow for the May 1st measurements, and SNOTEL sites at all elevations are well below normal for this date (58-72%).

Further north the higher elevations in Hyalite Canyon and in the Bridger Range are just slightly below normal for this date, while the lower elevations have experienced substantial melt from the abnormally warm conditions we have experienced this winter and spring. Low-elevation sites started active melt during the middle of March, and most elevations made the transition to active melt during the latter half of April. This indicates that peak snowpack could have occurred 2 to 3 weeks early, with snowmelt actively occurring at the end of the month.

Valley weather stations received 101 percent of the average precipitation for April while mountain stations received 85 percent of average. Currently on April 1st, the Gallatin River Basin is 91 percent of the water year-to-date average, and 74 percent of last year at this time.

Middle Creek Reservoir is currently 121 percent of average and 170 percent of last year at this time.

The basin-wide average April-July streamflow forecast for the Gallatin River is currently at 59 percent of average and 50 of last year. Due to the high variability of percentages in the forecasts please see the table below for individual river basins.

Gallatin River Basin Streamflow Forecasts - May 1, 2015

Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast

GALLATIN RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Gallatin River Gateway	MAY-JUL	172	215	240	65%	265	310	370
	MAY-SEP	205	255	285	65%	315	365	440
Hyalite Reservoir Inflow ²	MAY-JUL	14	15.8	17	92%	18.2	20	18.5
	MAY-SEP	16.1	18.1	19.5	93%	21	23	21
Gallatin River at Logan	MAY-JUL	66	142	194	51%	245	320	380
	MAY-SEP	89	181	245	55%	305	400	445

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

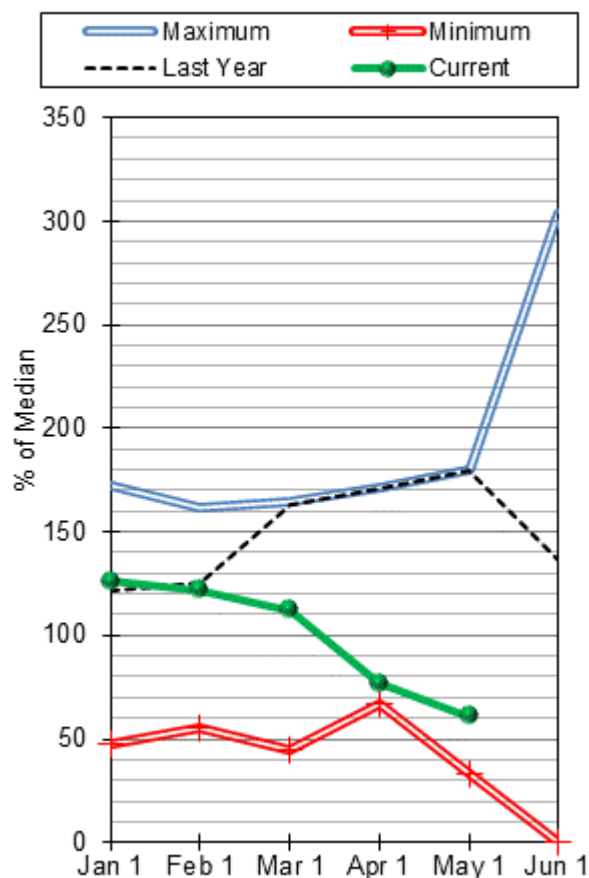
3) Median value used in place of average

Reservoir Storage End of April, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Middle Creek Res	7.5	4.4	6.2	10.2
Basin-wide Total	7.5	4.4	6.2	10.2
# of reservoirs	1	1	1	1

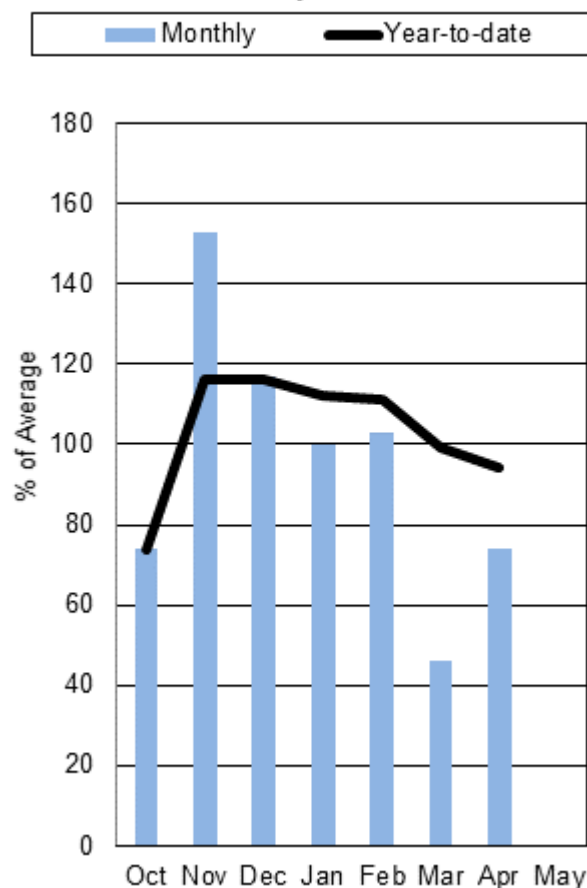
Watershed Snowpack Analysis May 1, 2015	# of Sites	% Median	Last Year % Median
UPPER GALLATIN	5	56%	133%
HYALITE	3	72%	158%
BRIDGER	2	70%	172%
GALLATIN RIVER BASIN	10	63%	147%

Missouri Headwaters Mainstem River Basin

Mountain Snowpack



Precipitation



Unusual weather patterns this winter and spring have reduced the well above normal snowpack in the Missouri Headwaters Mainstem basin to near record low for May 1st. Lower elevation SNOTEL sites in the basin reached peak snow water equivalent very early in the water year during mid-March, while upper elevations were able to hold onto snow a little longer into the latter half of April. As of the end of April all elevations have transitioned to active melt, 2 to 3 weeks early across the basin. Currently the basin is 61 percent of normal for snowpack on May 1st, and 34 percent of last year at this time.

SNOTEL sites in the basin reported 74 percent of average precipitation for the month of April. Currently on May 1st, mountain weather stations in the Missouri Headwaters Mainstem River Basin are 94 percent of the water year-to-date average, and 73 percent of last year at this time. The basin is historically favored during May and June with regards to precipitation, and due to the well below normal snowpack, will be needed to increase flows in rivers this spring and summer.

With the exception of Lake Helena, all reservoirs in the basin are above average for storage on May 1st. Winter storage was kept high due to the abundance of snow last water year, and this should help to ease the pain of below normal snowmelt runoff this year, to some extent. As a whole, the Missouri Mainstem is 116 percent of average for May 1st, and 116 percent of last year at this time.

The basin-wide average April-July streamflow forecast for the Missouri Headwaters Mainstem River is currently at 46 percent of average and 38 of last year. Due to the high variability of percentages in the forecasts please see the table below for individual river basins.

Missouri Mainstem Basin

Streamflow Forecasts - May 1, 2015

Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast

MISSOURI MAINSTEM BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Missouri R at Toston ²	MAY-JUL	149	430	615	42%	800	1080	1480
	MAY-SEP	160.34813	508.36112	740	42%	971.63888	1319.65187	1760
Dearborn R nr Craig	MAY-JUL	2.4	28	45	59%	62	87	76
	MAY-SEP	6.5	33	51	62%	69	96	82
Missouri R at Fort Benton ²	MAY-JUL	240	635	900	41%	1170	1560	2190
	MAY-SEP	330	835	1180	44%	1520	2030	2680
Missouri R nr Virgelle ²	MAY-JUL	320	765	1070	43%	1370	1820	2510
	MAY-SEP	380	970	1370	45%	1770	2360	3030
Missouri R nr Landusky ²	MAY-JUL	330	765	1060	40%	1350	1790	2650
	MAY-SEP	425	1000	1390	43%	1780	2360	3200
Missouri R bl Fort Peck Dam ²	MAY-JUL	123	645	1100	41%	1350	1880	2700
	MAY-SEP	84	795	1280	41%	1760	2480	3160
Lake Sakakawea Inflow ²	MAY-JUL	2130	3190	3910	54%	4630	5690	7230
	MAY-SEP	1860	3430	4490	54%	5550	7120	8320

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

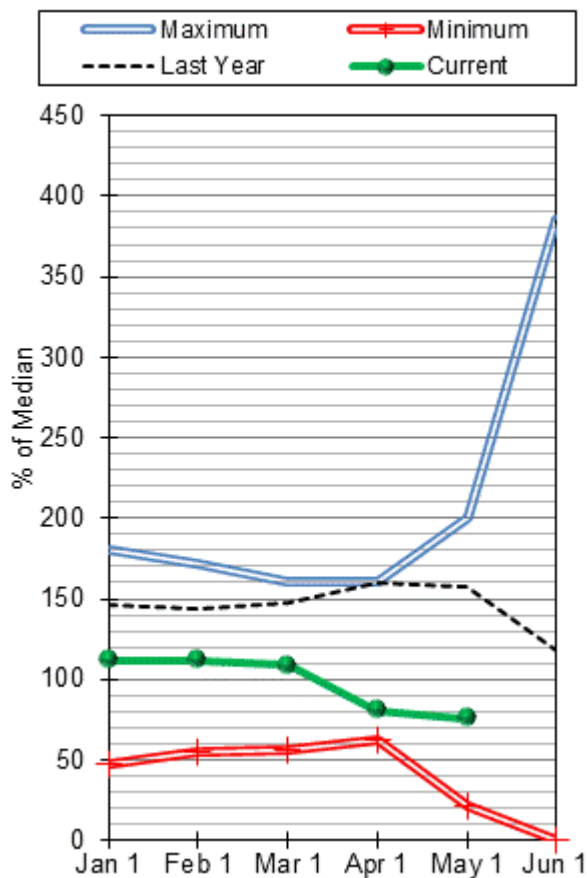
3) Median value used in place of average

Reservoir Storage End of April, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Canyon Ferry Lake	1563.6	1322.7	1480.0	2043.0
Helena Valley Reservoir	8.0	9.1	8.2	9.2
Lake Helena	11.0	11.0	10.8	12.7
Hauser Lake & Lake Helena	74.5	74.1	74.2	74.6
Holter Lake	81.1	80.6	80.6	81.9
Fort Peck Lake	15374.3	13360.9	13138.0	18910.0
Basin-wide Total	17112.3	14858.4	14791.8	21131.4
# of reservoirs	6	6	6	6

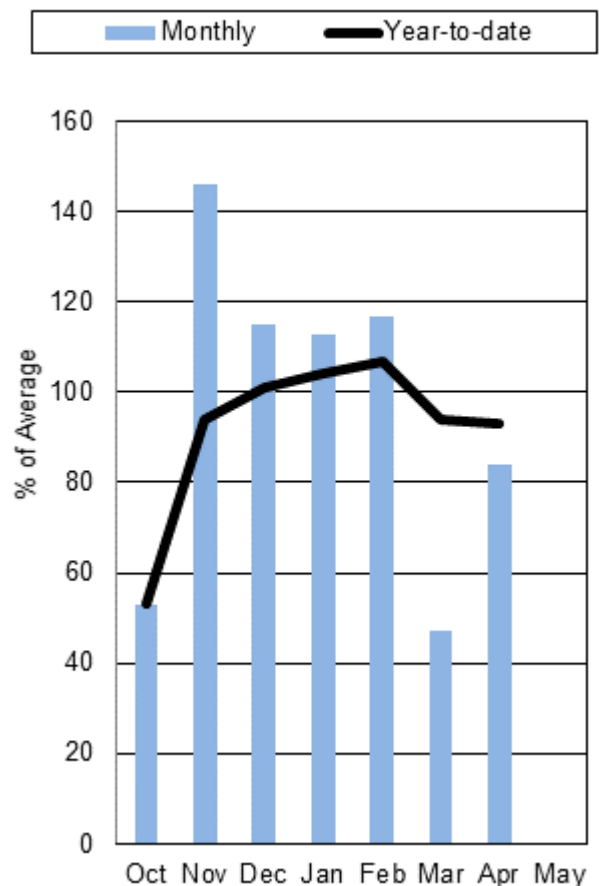
Watershed Snowpack Analysis May 1, 2015	# of Sites	% Median	Last Year % Median
HEADWATERS MAINSTEM	9	61%	180%
SMITH-JUDITH-MUSSELSHELL	10	76%	158%
SUN-TETON-MARIAS	10	39%	178%
MAINSTEM ab FT PECK RES	28	59%	173%
MILK RIVER BASIN	3	0%	0%
MISSOURI MAINSTEM BASIN	33	55%	169%

Smith-Judith-Musselshell River Basins

Mountain Snowpack



Precipitation



The Smith-Judith-Musselshell River basin's snowpack peaked about a month early this year. Fortunately, when it peaked it was at near normal conditions for that date. As of May 1st the basin has seen a 60 percent reduction from its peak snowpack. Porcupine, Pickfoot Creek, and Deadman Creek are the only SNOTEL sites that are melted out in the basin. Overall, the snowpack did receive minor accumulations that benefited the basin throughout the early melt. The Smith-Judith-Musselshell River basin currently has the highest snowpack percentage of normal in the state at 76 percent of normal for May 1st, and 48 percent of last year at this time.

Valley weather stations received 100 percent of monthly average precipitation for April, while mountain SNOTEL sites received 80 percent. Overall, the basin received 84 percent of its monthly average. Currently on May 1st, the Smith-Judith-Musselshell River basin is 93 percent of the water year-to-date average and 78 percent of last year at this time.

Basin reservoir storage is currently 152 percent of average for May 1st, and 115 percent of last year at this time.

The basin-wide average May-July streamflow forecast for the Smith-Judith-Musselshell River is currently at 65 percent of average and 44 percent of last year. Due to the high variability of percentages in the forecasts please see the table below for individual river basins.

Smith-Judith-Musselshell

Streamflow Forecasts - May 1, 2015

Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast

SMITH-JUDITH-MUSSEL SHELL	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Sheep Ck nr White Sulphur Springs	MAY-JUL	6.3	9.3	11.3	84%	13.3	16.3	13.4
	MAY-SEP	7.8	11.5	13.9	86%	16.4	20	16.2
Smith R bl Eagle Ck ²	MAY-JUL	23	50	69	78%	88	115	89
	MAY-SEP	25	58	81	82%	104	137	99
NF Musselshell R nr Delpine	MAY-JUL	0.5	1.94	2.9	88%	3.9	5.3	3.3
	MAY-SEP	0.81	2.5	3.6	88%	4.8	6.5	4.1
SF Musselshell R ab Martinsdale	MAY-JUL	1	11.2	24	65%	37	56	37
	MAY-SEP	1	12.7	26	65%	39	59	40
Musselshell R at Harlowton ²	MAY-JUL	-5	10.3	31	65%	52	83	48
	MAY-SEP	-4	9.4	32	64%	54	87	50
Musselshell R nr Roundup ²	MAY-JUL	0	9.2	21	39%	34	52	54
	MAY-SEP	0	7	19.8	37%	33	51	54

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

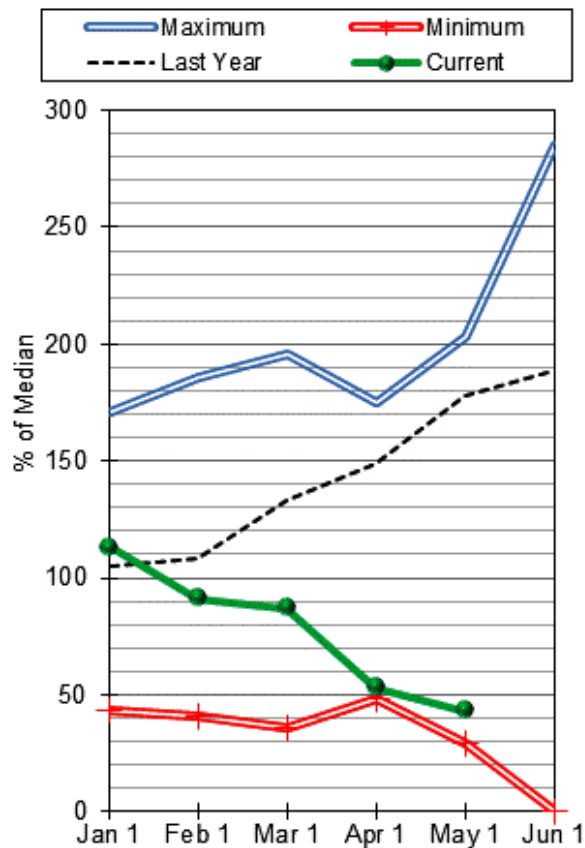
3) Median value used in place of average

Reservoir Storage End of April, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Smith River Res	10.4	10.7	8.3	10.6
Ackley Lake	4.9	4.1	3.3	7.0
Bair Res	6.4	5.1	4.5	7.0
Martinsdale Res	22.9	15.1	11.8	23.1
Deadman's Basin Res	75.7	69.3	51.0	72.2
Basin-wide Total	120.3	104.4	78.9	119.9
# of reservoirs	5	5	5	5

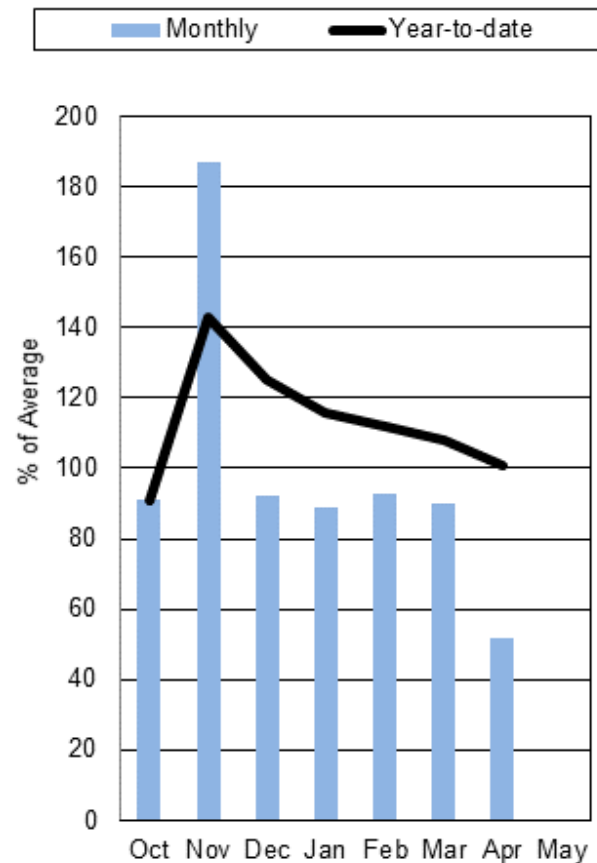
Watershed Snowpack Analysis May 1, 2015	# of Sites	% Median	Last Year % Median
SMITH	6	71%	159%
HIGHWOOD	0		
JUDITH	5	84%	149%
MUSSEL SHELL	2	92%	205%
SMITH-JUDITH-MUSSEL SHELL	10	76%	158%

Sun-Teton-Marias River Basins

Mountain Snowpack



Precipitation



Reaching its peak snow water equivalent near mid-March the Sun-Teton-Marias River basin started its melt very early this year. The basin received snow at higher elevations during the first half of April that improved the basins snowpack percentages of normal. That being said, the basin still has record low snowpack conditions. As of May 1st, Badger Pass SNOTEL (6900 ft) and Mount Lockhart SNOTEL (6400 ft) were the only May measurement locations in the Sun-Teton-Marias River basin that had more than an inch of snow depth. Snow Surveyor Kraig Lange was able to ride horses all the way into the Sun River snow courses for the first time in 15 years. Currently 5 of the basin's measurement locations have their lowest snowpack on record. Overall, the Sun-Teton-Marias River basin is at 43 percent of normal snowpack and 24 percent of last year at this time.

Valley weather stations received 45 percent of monthly average precipitation for April, while mountain SNOTEL sites received 55 percent. Overall, the basin received 52 percent of its monthly average. Currently on May 1st, the Sun-Teton-Marias River basin is 101 percent of the water year-to-date average and 88 percent of last year at this time.

Basin reservoir storage is currently 120 percent of average for May 1st, and 124 percent of last year at this time.

The basin-wide average May-July streamflow forecast for the Sun-Teton-Marias River is currently at 58 percent of average and 75 percent of last year. Due to the high variability of percentages in the forecasts please see the table below for individual river basins.

Sun-Teton-Marias Streamflow Forecasts - May 1, 2015

Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast

SUN-TETON-MARIAS	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Gibson Reservoir Inflow	MAY-JUL	174	210	240	68%	265	305	355
	MAY-SEP	200	245	275	70%	300	345	395
Two Medicine R nr Browning ²	MAY-JUL	65	85	98	64%	111	131	153
	MAY-SEP	72	93	108	66%	122	144	164
Badger Ck nr Browning	MAY-JUL	19.5	31	38	49%	45	56	77
	MAY-SEP	22	35	44	48%	53	66	92
Swift Reservoir Inflow ²	MAY-JUL	11.9	21	28	57%	34	44	49
	MAY-SEP	18.3	29	37	62%	44	56	60
Dupuyer Ck nr Valier	MAY-JUL	0.2	0.9	2.6	29%	7	13.4	9.1
	MAY-SEP	0.2	1.1	3.6	34%	8.5	15.7	10.7
Cut Bank Ck nr Browning	MAY-JUL	26	37	44	71%	51	62	62
	MAY-SEP	28	40	48	71%	56	68	68
Marias R nr Shelby ²	MAY-JUL	10	66	124	44%	182	270	285
	MAY-SEP	10	56	121	40%	186	280	300
Teton R nr Dutton	MAY-JUL	1	4	16.2	46%	31	53	35
	MAY-SEP	1	4.6	21	51%	37	61	41

1) 90% and 10% exceedance probabilities are actually 95% and 5%

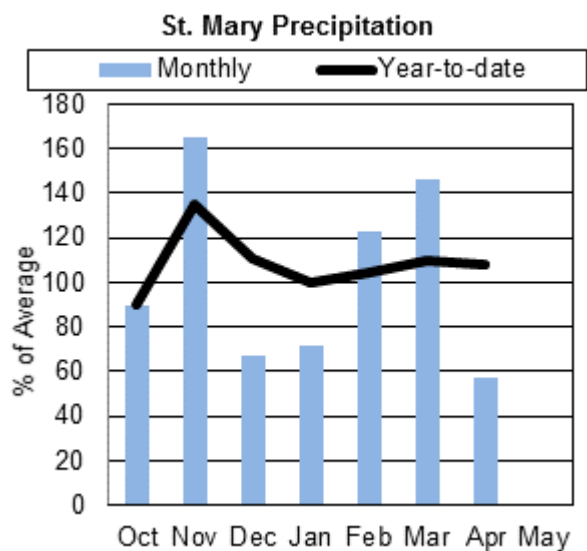
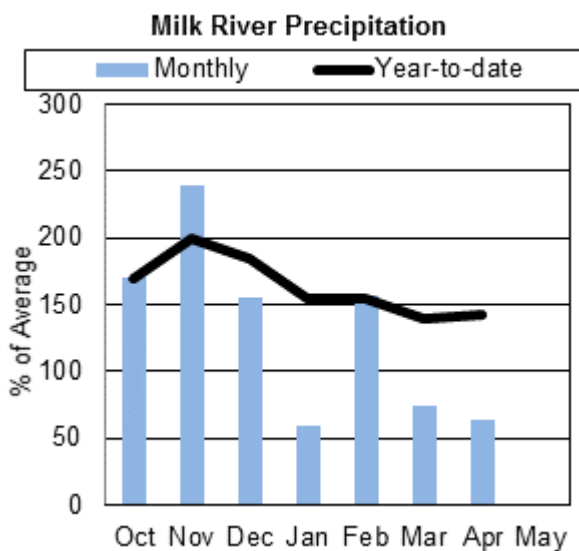
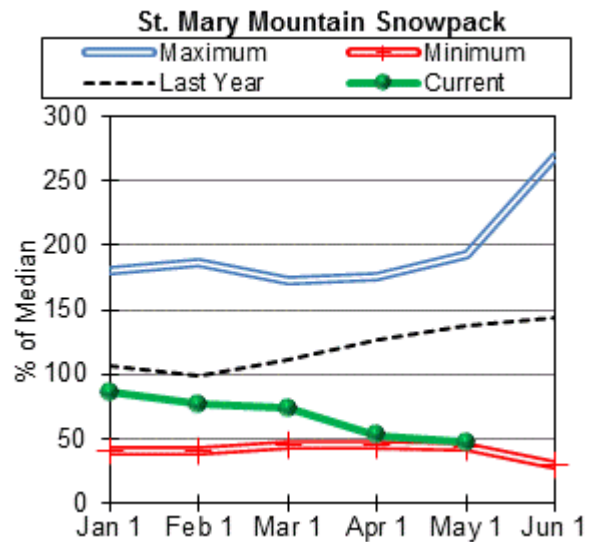
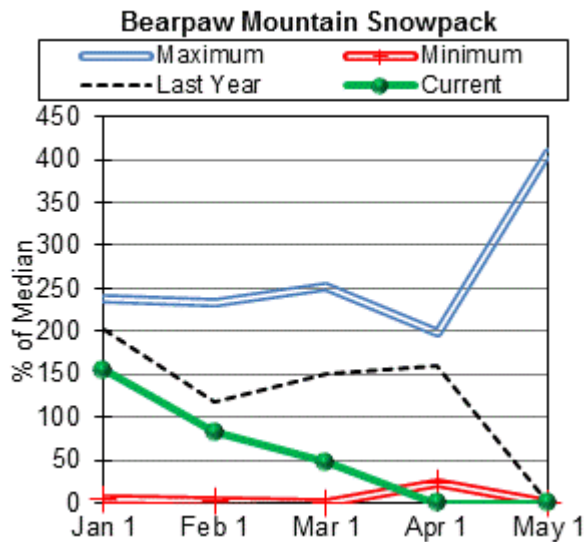
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of April, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Gibson Res	80.7	22.9	62.6	99.1
Pishkun Res	31.0	30.2	23.3	32.0
Willow Creek Res - Augusta	30.7	29.3	25.6	32.2
Lower Two Medicine Lake	12.6	9.6	10.5	11.9
Four Horns Lake	11.2	9.9	10.5	19.2
Swift Res	19.4	3.7	18.1	30.0
Lake Frances	89.9	60.8	66.6	112.0
Lake Elwell (Tiber)	844.8	739.0	716.2	1347.0
Basin-wide Total	1120.3	905.5	933.4	1683.4
# of reservoirs	8	8	8	8

Watershed Snowpack Analysis May 1, 2015	# of Sites	% Median	Last Year % Median
SUN	5	40%	178%
TETON	4	32%	185%
MARIAS	4	42%	168%
SUN-TETON-MARIAS	10	39%	178%

St. Mary and Milk River Basins



Having reached its peak snowpack in mid-March it appeared the Saint Mary-Milk River basin was going to shatter its previous basin-wide record low snowpack numbers. Fortunately, higher elevations in the basin received just under an inch of snow water equivalent during the first half of April. Basin percentages of normal rebounded slightly during this period, however they are still grim. Snow Surveyors found very different conditions this month at the Many Glacier area than they did last year. Piegian Pass Snow Course (5500 ft) marker signs that were installed last May at chest height were nearly 10 ft off the ground this year. Last year was a large snow year at 104 inches of depth. This year the Snow Course had 28 percent of its normal snow depth at 19 inches. As of May 1st, 6 of the 9 measurement locations in the basin are snow free, including all sites east of Glacier National Park. Overall, the Saint Mary-Milk River basin is at 47 percent of normal snowpack and 32 percent of last year at this time.

Valley weather stations received 72 percent of monthly average precipitation for April, while mountain SNOTEL sites received 50 percent. Overall, the basin received 57 percent of its monthly average. Currently on May 1st, the Saint Mary-Milk River basin is 108 percent of the water year-to-date average and 101 percent of last year at this time.

Basin reservoir storage is currently 298 percent of average for May 1st, and 148 percent of last year at this time.

The basin-wide average May-July streamflow forecast for the Saint Mary River is currently at 75 percent of average and 52 percent of last year. Due to the high variability of percentages in the forecasts please see the table below for individual river basins.

St. Mary & Milk Basins Streamflow Forecasts - May 1, 2015

Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast

ST. MARY & MILK BASINS	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Lake Sherburne Inflow	MAY-JUL	53	61	67	78%	73	81	86
	MAY-SEP	65	74	81	80%	88	97	101
St. Mary R nr Babb ²	MAY-JUL	199	235	260	76%	285	320	340
	MAY-SEP	235	275	305	77%	335	375	395
St. Mary R at Intl Boundary ²	MAY-JUL	205	255	290	73%	325	375	400
	MAY-SEP	250	310	345	73%	385	440	470
Milk R at Western Crossing of Intl Bndry, AB	MAY-JUL	1	5.7	10.6	65%	15.5	23	16.3
	MAY-SEP	1	6.4	12	68%	17.6	26	17.7
Milk R at Eastern Crossing of Intl Bndry								

1) 90% and 10% exceedance probabilities are actually 95% and 5%

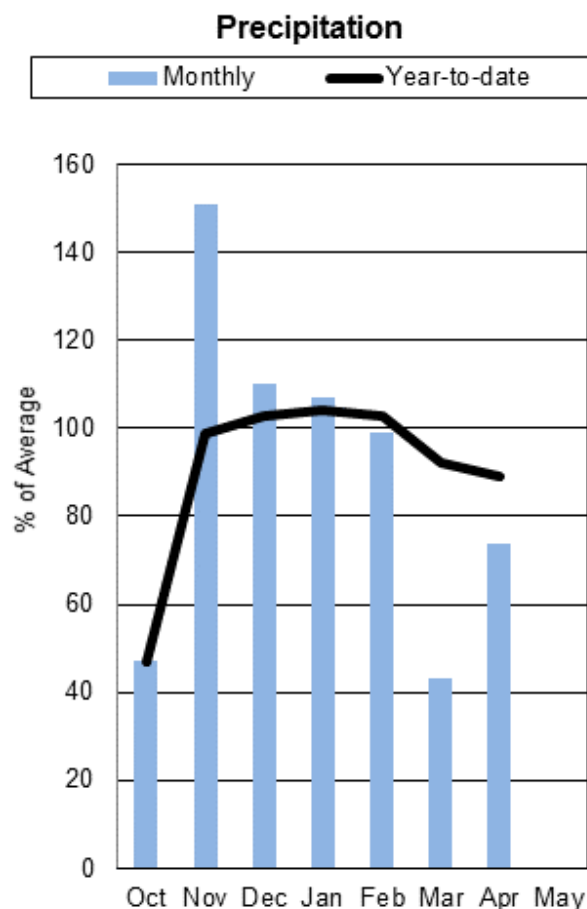
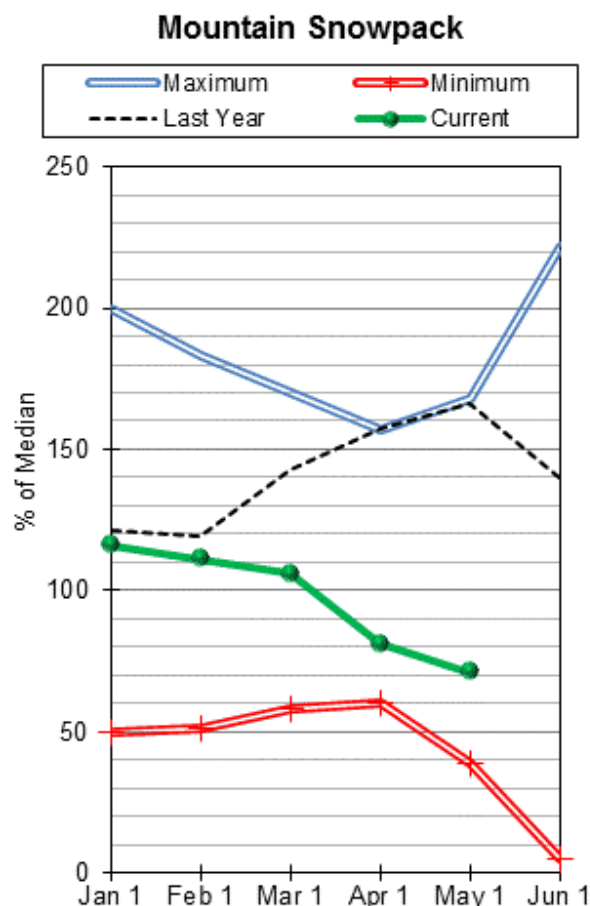
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of April, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Lake Sherburne	53.7	36.1	18.0	64.3
Fresno Res	93.7	90.2	74.9	127.0
Nelson Res	59.4	58.3	42.4	66.8
Basin-wide Total	206.8	184.6	135.3	258.1
# of reservoirs	3	3	3	3

Watershed Snowpack Analysis May 1, 2015	# of Sites	% Median	Last Year % Median
ST. MARY	6	47%	147%
BEARPAW MOUNTAINS	3	0%	0%
CYPRESS HILLS, CANADA	0		
MILK RIVER BASIN	3	0%	0%
ST. MARY & MILK BASINS	9	47%	145%

Upper Yellowstone River Basin



Snowpack above Livingston in Yellowstone National Park is currently the lowest (57%) in the greater Upper Yellowstone River basin on May 1st. As you move north and east in the river system conditions generally improve, but still remain below normal for this date. The Shields River basin is currently 72 percent of normal, the Boulder River basin is 74 percent of normal, the Rock Creek drainage is 89 percent of normal, and the Clark's Fork basin is 83 percent of normal.

Snowmelt began at the lower elevations during the middle of March, and seven SNOTEL sites in the basin had melted out as of May 1st. All elevations made the transition to snowmelt by the latter half of April, 2-4 weeks early depending on the elevation. Due to the high elevation nature of the basin spring storms are still possible, and will be needed due to the below normal snowpack for this date. Overall, the

The Shields River basin in the north was favored for monthly precipitation where 103 percent of the normal April precipitation fell. Further south below average precipitation fell during the month. Valley weather stations received 74 percent of monthly average precipitation for April, while mountain SNOTEL sites received a similarly disappointing 73 percent. Currently on May 1st, the Upper Yellowstone River Basin is 89 percent of the water year-to-date average and 66 percent of last year at this time.

Basin-wide reservoir storage is currently at 106 percent of average, and 112 percent of last year at this time.

The basin-wide average May-July streamflow forecast for the Upper Yellowstone River is currently at 74 percent of average and 51 percent of last year. Due to the high variability of percentages in the forecasts please see the table below for individual river basins.

Upper Yellowstone River Basin Streamflow Forecasts - May 1, 2015

Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast

UPPER YELLOWSTONE RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Yellowstone R at Yellowstone Lake Outlet	MAY-JUL	200	260	300	55%	340	400	545
	MAY-SEP	275	350	400	54%	450	525	735
Yellowstone R at Corwin Springs	MAY-JUL	815	965	1070	72%	1170	1330	1480
	MAY-SEP	955	1140	1270	72%	1400	1580	1770
Yellowstone R at Livingston	MAY-JUL	895	1080	1210	72%	1340	1530	1670
	MAY-SEP	1070	1290	1450	72%	1600	1830	2010
Shields R nr Livingston	MAY-JUL	1	30	57	53%	84	123	108
	MAY-SEP	1	34	64	52%	94	139	123
Boulder R at Big Timber	MAY-JUL	161	191	210	78%	230	260	270
	MAY-SEP	165	200	225	78%	250	285	290
Mystic Lake Inflow ²	MAY-JUL	40	45	48	84%	51	55	57
	MAY-SEP	51	57	62	86%	66	73	72
Stillwater R nr Absarokee ²	MAY-JUL	280	330	365	87%	400	450	420
	MAY-SEP	330	390	435	88%	475	535	495
Clarks Fk Yellowstone R nr Belfry	MAY-JUL	355	395	425	89%	455	495	480
	MAY-SEP	375	425	460	88%	495	545	525
Cooney Reservoir Inflow	MAY-JUL	7.1	17.1	24	73%	31	41	33
	MAY-SEP	14.3	25	33	77%	40	51	43
Yellowstone R at Billings	MAY-JUL	1550	1960	2230	74%	2510	2920	3000
	MAY-SEP	1750	2260	2600	74%	2950	3450	3490

1) 90% and 10% exceedance probabilities are actually 95% and 5%

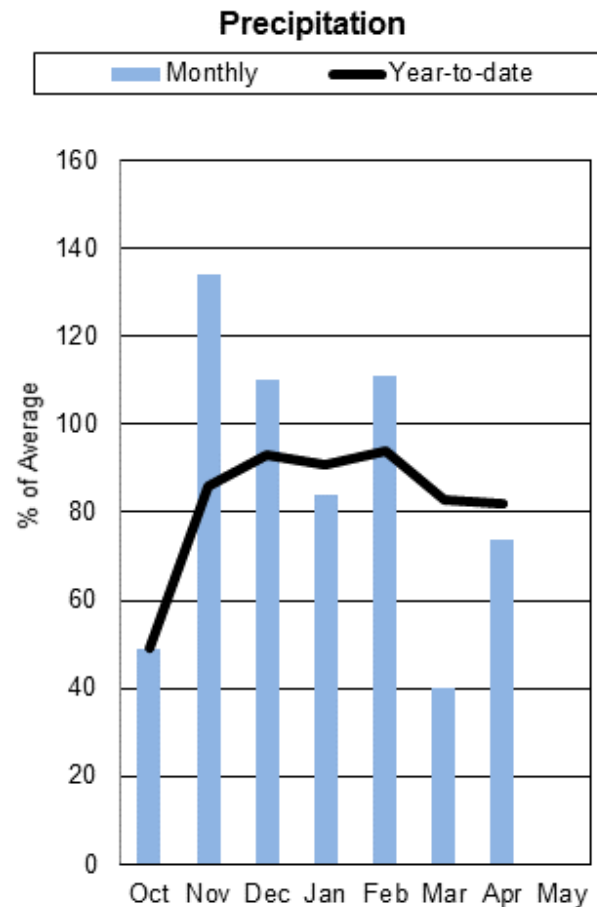
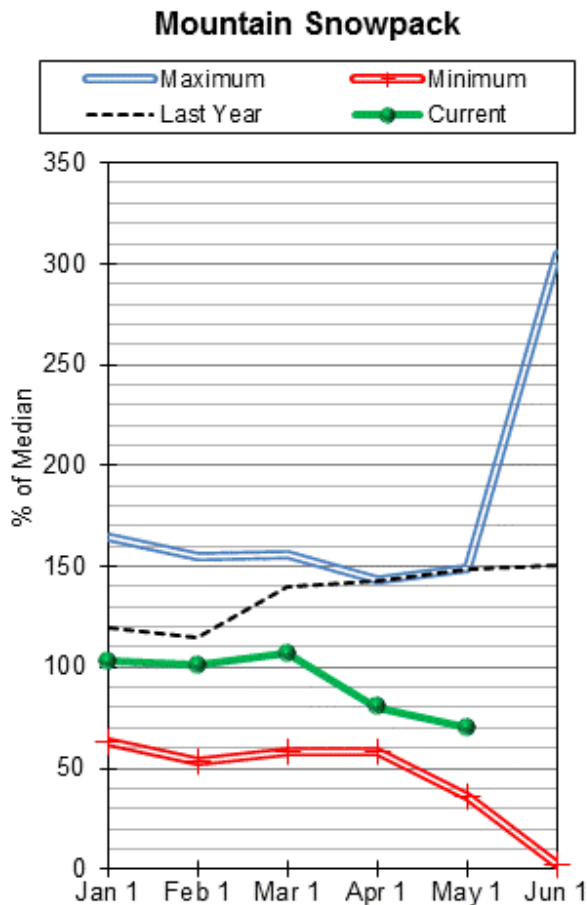
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of April, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Mystic Lake	0.3	0.3	0.6	21.0
Cooney Res	23.6	21.0	21.9	27.4
Basin-wide Total	23.8	21.3	22.5	48.4
# of reservoirs	2	2	2	2

Watershed Snowpack Analysis May 1, 2015	# of Sites	% Median	Last Year % Median
YELLOWSTONE ab LIVINGSTON	10	62%	156%
SHIELDS	4	72%	174%
BOULDER-STILLWATER	3	74%	169%
RED LODGE-ROCK CREEK	5	89%	201%
CLARK'S FORK	7	83%	171%
UPPER YELLOWSTONE RIVER BASIN	26	71%	166%

Lower Yellowstone River Basin



After managing to hang on to near normal snowpack conditions until around mid-March, the Lower Yellowstone River basin has made substantial declines during the last two months. The western half of the basin is the lowest in percentage of normal snowpack where the Wind River basin is currently 64 percent of normal and Shoshone River basin is 60 percent of normal for May 1st. As you move east in the river basin conditions improve, but remain below normal for this date. The Bighorn River basin is currently 69 percent of normal, the Powder River basin is 73 percent of normal, and the Tongue River basin is 82 percent of normal.

Similar to the basins in Montana low elevations began the transition to active melt during the middle of March and are snow free as of May 1st. Higher elevations which have been able to retain their snowpack this winter during the abnormally warm conditions are slightly below normal for this date. The Lower Yellowstone River basin is favored for precipitation during the months of May and June and this precipitation (potentially snow at higher elevations) will be key this runoff season as snowmelt contributions to streamflows will be below normal.

Overall precipitation during the month of April was below average. Valley weather stations received 68 percent of monthly average precipitation for April, while mountain SNOTEL sites received 75 percent. Currently on May 1st, the Lower Yellowstone River Basin is 82 percent of the water year-to-date average and 67 percent of last year at this time.

Basin-wide reservoir storage is currently at 110 percent of average, and 117 percent of last year at this time.

The basin-wide average April-July streamflow forecast for the Lower Yellowstone River is currently at 63 percent of average and 40 percent of last year. Due to the high variability of percentages in the forecasts please see the table below for individual river basins.

Lower Yellowstone River Basin (Wyoming)

Streamflow Forecasts - May 1, 2015

Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast

LOWER YELLOWSTONE RIVER BASIN (Wyoming)	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Bighorn R nr St. Xavier ²	MAY-JUL	225	460	620	49%	780	1010	1260
	MAY-SEP	210	475	650	49%	830	1090	1340
Little Bighorn R nr Hardin	MAY-JUL	24.3173	49.75089	67	79%	84.24911	109.6827	85
	MAY-SEP	24.65764	54.05082	74	76%	93.94918	123.34236	97
Tongue R nr Dayton ²	MAY-JUL	37.3355	51.4366	61	76%	70.5634	84.6645	80
	MAY-SEP	45.93695	61.46729	72	78%	82.53271	98.06305	92
Big Goose Ck nr Sheridan	MAY-JUL	17.4	26	31	70%	36	45	44
	MAY-SEP	24	32	38	73%	44	52	52
Little Goose Ck nr Bighorn	MAY-JUL	13.7	18.6	22	76%	25	30	29
	MAY-SEP	20	25	29	78%	33	38	37
Tongue River Reservoir Inflow ²	MAY-JUL	26	80	116	66%	152	205	175
	MAY-SEP	39	96	135	68%	174	230	198
Yellowstone R at Miles City ²	MAY-JUL	1960	2520	2910	67%	3290	3850	4370
	MAY-SEP	2120	2860	3370	67%	3880	4620	5030
Powder R at Moorehead	MAY-JUL	2	28	63	42%	97	148	151
	MAY-SEP	2	45	81	48%	117	171	170
Powder R nr Locate	MAY-JUL	1	21	65	40%	109	174	164
	MAY-SEP	1	34	82	44%	131	200	185
Yellowstone R nr Sidney ²	MAY-JUL	1640	2310	2770	63%	3230	3910	4380
	MAY-SEP	1630	2520	3130	63%	3730	4620	4980

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

3) Median value used in place of average

Reservoir Storage End of April, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Bighorn Lake	825.3	711.5	773.6	1356.0
Tongue River Res	66.5	45.5	34.7	79.1
Basin-wide Total	891.9	757.1	808.3	1435.1
# of reservoirs	2	2	2	2

Watershed Snowpack Analysis May 1, 2015	# of Sites	% Median	Last Year % Median
WIND RIVER (Wyoming)	17	64%	138%
SHOSHONE RIVER (Wyoming)	4	60%	147%
BIGHORN RIVER (Wyoming)	16	69%	154%
LITTLE BIGHORN (Wyoming)	3	84%	150%
TONGUE RIVER (Wyoming)	9	82%	152%
POWDER RIVER (Wyoming)	7	73%	174%
LOWER YELLOWSTONE RIVER BASIN (Wyoming)	41	70%	149%

Montana Site Report

	Network	Elevation (ft)	Depth (in)	SWE (in)	Median (in)	% Median	Last Year SWE (in)	Last Year % Median
Albro Lake	SNOTEL	8300	34	14.6	18.9	77%	29.5	156%
Ambrose	SC	6480	9	0.9	9.6	9%	17.2	179%
Arch Falls	SC	7350	12	4.1	10.7	38%	16.7	156%
Ashley Divide	SC	4820	0	0.0	0.0		1.1	
Badger Pass	SNOTEL	6900	44	22.6	29.4	77%	45.9	156%
Banfield Mountain	SNOTEL	5600	3	1.6	13.1	12%	19.7	150%
Baree Creek	SC	5500	34	15.4	34.8	44%	49.5	142%
Baree Midway	SC	4600	10	4.5	22.7	20%	36.9	163%
Baree Trail	SC	3800	0	0.0	0.0		2.3	
Barker Lakes	SNOTEL	8250	35	13.0	16.3	80%	22.1	136%
Basin Creek	SNOTEL	7180	16	6.8	9.0	76%	13.6	151%
Bassoo Peak	SC	5150	0	0.0	0.0		7.6	
Beagle Springs	SNOTEL	8850	9	2.7	8.7	31%	10.0	115%
Bear Basin	SC	8150			17.2		25.4	148%
Bear Mountain	SNOTEL	5400	38	18.3	53.7	34%	60.7	113%
Beartooth Lake	SNOTEL	9360	61	20.6	22.8	90%	34.9	153%
Beaver Creek	SNOTEL	7850	26	10.5	18.2	58%	23.8	131%
Big Snowy	SC	7150	48	18.5	20.6	90%	24.8	120%
Bisson Creek	SNOTEL	4920	0	0.0	4.3	0%	10.9	253%
Black Bear	SNOTEL	8170	50	21.4	37.4	57%	45.9	123%
Black Mountain	SC	7750	28	11.8	15.9	74%	19.4	122%
Black Pine	SNOTEL	7210	0	0.0	8.5	0%	17.4	205%
Blacktail	SC	5650	0	0.0	7.0	0%	11.8	169%
Blacktail Mtn	SNOTEL	5650	0	0.0			11.8	
Bloody Dick	SNOTEL	7600	11	5.0	8.5	59%	15.3	180%
Bots Sots	SC	7750	0	0.0	4.5	0%	9.7	216%
Boulder Mountain	SNOTEL	7950	41	14.1	20.9	67%	29.2	140%
Box Canyon	SNOTEL	6670	0	0.0	3.0	0%	8.8	293%
Boxelder Creek	SC	5100	0	0.0	1.6	0%	0.0	0%
Brackett Creek	SNOTEL	7320	41	18.5	20.1	92%	33.3	166%
Bristow Creek	SC	3900						
Brush Creek Timber	SC	5000	0	0.0	1.0	0%	9.2	920%
Bull Mountain	SC	6600	0	0.0	0.0		2.8	
Burnt Mtn	SNOTEL	5880	0	0.0	0.0		5.2	
Cabin Creek	SC	5200	0	0.0	0.2	0%	0.8	400%
Calvert Creek	SNOTEL	6430	0	0.0	0.7	0%	1.5	214%
Camp Senia	SC	7890	30	10.8	5.4	200%	17.9	331%
Canyon	SNOTEL	7870	9	3.6	10.4	35%	15.4	148%
Carrot Basin	SNOTEL	9000	46	18.0	28.6	63%	34.8	122%
Chessman Reservoir	SC	6200	2	0.2	0.4	50%	3.4	850%
Chicago Ridge	SC	5800	42	18.8			42.2	
Chicken Creek	SC	4060	1	0.4	4.8	8%	15.4	321%
Clover Meadow	SNOTEL	8600	34	11.9	17.4	68%	20.3	117%
Cole Creek	SNOTEL	7850	35	13.8	16.6	83%	25.7	155%
Combination	SNOTEL	5600	0	0.0	0.0		0.2	
Copper Bottom	SNOTEL	5200	0	0.0			0.0	
Copper Camp	SNOTEL	6950	38	20.1			52.3	
Copper Mountain	SC	7700	28	11.2	9.6	117%	11.6	121%
Cottonwood Creek	SC	6400	0	0.0	7.8	0%	8.2	105%
Coyote Hill	SC	4200	0	0.0	0.0		2.0	
Crevice Mountain	SC	8400						
Crystal Lake	SNOTEL	6050	22	8.1	11.3	72%	19.4	172%
Dad Creek Lake	SC	8800			15.6			
Daisy Peak	SNOTEL	7600	28	10.1	10.2	99%	15.5	152%

Daly Creek	SNOTEL Network	5780 Elevation (ft)	0 Depth (in)	0.0 SWE (in)	3.3 Median (in)	0% % Median	11.6 Last Year SWE (in)	352% Last Year % Median
Darkhorse Lake	SNOTEL	8600	70	31.3	30.1	104%	41.4	138%
Deadman Creek	SNOTEL	6450	0	0.0	5.2	0%	13.0	250%
Desert Mountain	SC	5600	6	2.8				
Discovery Basin	SC	7050	16	6.3	8.8	72%	16.3	185%
Divide	SNOTEL	7800	3	1.1	11.1	10%	11.5	104%
Dix Hill	SC	6400	0	0.0	0.2	0%	9.6	4800%
Dupuyer Creek	SNOTEL	5750	0	0.0	6.7	0%	11.8	176%
Eagle Creek	SC	7000						
East Boulder Mine	SNOTEL	6335	0	0.0			4.6	
El Dorado Mine	SC	7800						
Elk Horn Springs	SC	7800		2.2	6.7	33%	12.9	193%
Elk Peak	SNOTEL	7600	37	15.9			32.2	
Elk Peak	SC	8000	35	13.0	15.2	86%		
Emery Creek	SNOTEL	4350	0	0.0	5.7	0%	11.5	202%
Fatty Creek	SC	5500	37	15.7	20.9	75%	34.8	167%
Fish Creek	SC	8000			11.0			
Fisher Creek	SNOTEL	9100	73	29.4	32.7	90%	47.9	146%
Flattop Mtn.	SNOTEL	6300	82	34.0	42.2	81%	57.3	136%
Fleecer Ridge	SC	7500	6	2.6	8.0	33%	15.8	198%
Foolhen	SC	8280			15.4			
Forest Lake	SC	6400						
Four Mile	SC	6900	4	0.6	4.6	13%	8.6	187%
Freight Creek	SC	6000	1	0.5	9.0	6%	15.0	167%
Frohner Meadow	SNOTEL	6480	0	0.0	6.4	0%	11.1	173%
Garver Creek	SNOTEL	4250	2	0.6	1.9	32%	6.6	347%
Gibbons Pass	SC	7100						
Goat Mountain	SC	7000			5.4			
Government Saddle	SC	5270	33	13.8			38.0	
Grave Creek	SNOTEL	4300	0	0.0	5.0	0%	15.2	304%
Griffin Creek Divide	SC	5150	0	0.0	2.0	0%	9.6	480%
Hand Creek	SNOTEL	5035	0	0.0	5.5	0%	8.8	160%
Hawkins Lake	SNOTEL	6450	44	19.5	25.9	75%	31.1	120%
Haymaker	SC	8050						
Hebgen Dam	SC	6550	0	0.0	3.7	0%	6.4	173%
Hell Roaring Divide	SC	5770	48	19.6	26.6	74%	35.7	134%
Herrig Junction	SC	4850	28	12.2	20.9	58%	30.5	146%
Highwood Divide	SC	5650						
Highwood Station	SC	4600			0.0			
Holbrook	SC	4530	0	0.0	0.0		0.0	
Hoodoo Basin	SNOTEL	6050	66	26.8	39.8	67%	57.5	144%
Humboldt Gulch	SNOTEL	4250	0	0.0	1.4	0%	11.1	793%
Jakes Canyon	SC	9040						
Johnson Park	SC	6450			0.0		0.0	
Kishenehn	SC	3890						
Kraft Creek	SNOTEL	4750	0	0.0			12.8	
Lake Camp	SC	7780	0	0.0	6.6	0%	13.0	197%
Lakeview Canyon	SC	6930	0	0.0	8.5	0%		
Lakeview Ridge	SNOTEL	7400	0	0.0	7.9	0%	3.4	43%
Lemhi Ridge	SNOTEL	8100	5	1.1	10.0	11%	11.7	117%
Lick Creek	SNOTEL	6860	16	5.8	8.7	67%	18.4	211%
Little Park	SC	7400	20	8.2	12.6	65%	18.3	145%
Logan Creek	SC	4300	0	0.0	0.0		4.8	
Lolo Pass	SNOTEL	5240	17	7.9	17.2	46%	36.7	213%
Lone Mountain	SNOTEL	8880	32	13.4	18.5	72%	29.9	162%
Lookout	SNOTEL	5140	0	0.0	22.7	0%	31.5	139%
Lower Twin	SNOTEL	7900	42	10.4	18.4	57%	26.1	142%

Lubrecht Flume	SNOTEL Network	4680 Elevation (ft)	0 Depth (in)	0.0 SWE (in)	0.0 Median (in)	% Median	0.0 Last Year SWE (in)	Last Year % Median
Lubrecht Forest No 3	SC	5450	0	0.0	0.0		2.9	
Lubrecht Forest No 4	SC	4650	0	0.0	0.0		0.0	
Lubrecht Forest No 6	SC	4040	0	0.0	0.0		0.0	
Lubrecht Hydroplot	SC	4200	0	0.0	0.0		0.0	
Lupine Creek	SC	7380			1.2		4.1	342%
Madison Plateau	SNOTEL	7750	19	9.6	21.3	45%	27.4	129%
Many Glacier	SNOTEL	4900	0	0.0	0.6	0%	8.6	1433%
Marias Pass	SC	5250	0	0.0	10.4	0%	20.3	195%
Mineral Creek	SC	4000	0	0.0	6.5	0%	2.4	37%
Monument Peak	SNOTEL	8850	40	16.7	21.0	80%	31.6	150%
Moss Peak	SNOTEL	6780	84	40.2	38.7	104%	50.4	130%
Moulton Reservoir	SC	6850			1.5			
Mount Allen No 7	SC	5700	33	15.5	35.0	44%	45.2	129%
Mount Lockhart	SNOTEL	6400	26	11.3	16.9	67%	28.7	170%
Mudd Lake	SC	7650			16.2			
Mule Creek	SNOTEL	8300	40	14.5	16.1	90%	23.0	143%
N Fk Elk Creek	SNOTEL	6250	6	2.3	7.5	31%	16.0	213%
Nevada Ridge	SNOTEL	7020	16	7.8	12.3	63%	23.7	193%
New World	SC	6900					20.4	
Nez Perce Camp	SNOTEL	5650	9	3.8	9.7	39%	18.6	192%
Noisy Basin	SNOTEL	6040	87	40.5	44.0	92%	54.8	125%
Norris Basin	SC	7550			5.4		7.6	141%
North Fork Jocko	SNOTEL	6330	58	28.0	38.2	73%	55.5	145%
Northeast Entrance	SNOTEL	7350	0	0.0	3.0	0%	11.4	380%
Onion Park	SNOTEL	7410	28	12.0	13.5	89%	18.0	133%
Ophir Park	SC	7150	8	3.5	13.8	25%	20.3	147%
Parker Peak	SNOTEL	9400	41	16.5	21.3	77%	37.7	177%
Peterson Meadows	SNOTEL	7200	14	6.5	10.7	61%	16.6	155%
Pickfoot Creek	SNOTEL	6650	0	0.0	3.7	0%	12.1	327%
Pike Creek	SNOTEL	5930	0	0.0			9.5	
Pipestone Pass	SC	7200	8	1.5	3.4	44%	8.6	253%
Placer Basin	SNOTEL	8830	39	14.1	17.6	80%	30.1	171%
Poorman Creek	SNOTEL	5100	13	5.9	28.2	21%	45.0	160%
Porcupine	SNOTEL	6500	0	0.0	0.8	0%	7.0	875%
Potomageton Park	SC	7150	0	0.0	7.1	0%	10.8	152%
Revais	SC	4800	0	0.0	0.0		0.0	
Rock Creek Mdws	SC	3400	0	0.0			10.2	
Rocker Peak	SNOTEL	8000	40	14.5	14.9	97%	24.6	165%
Rocky Boy	SNOTEL	4700	0	0.0	0.0		0.0	
Roland Summit	SC	5120						
S Fork Shields	SNOTEL	8100	34	13.8	17.8	78%	26.0	146%
Sacajawea	SNOTEL	6550	5	2.8	10.3	27%	19.1	185%
Saddle Mtn.	SNOTEL	7940	47	20.1	22.5	89%	38.2	170%
Short Creek	SNOTEL	7000	0	0.0	3.8	0%	4.0	105%
Shower Falls	SNOTEL	8100	55	21.1	23.9	88%	33.4	140%
Skalkaho Summit	SNOTEL	7250	25	12.0	22.1	54%	29.7	134%
Sleeping Woman	SNOTEL	6150	9	4.0	11.0	36%	19.6	178%
Slide Rock Mountain	SC	7100	18	7.8	13.0	60%	18.3	141%
Spotted Bear Mountain	SC	7000	0	0.0	7.7	0%	18.1	235%
Spur Park	SNOTEL	8100	56	21.9	22.4	98%	30.9	138%
Stahl Peak	SNOTEL	6030	63	24.8	35.4	70%	44.2	125%
Stemple Pass	SC	6600	12	4.0	6.9	58%	13.8	200%
Storm Lake	SC	7780	26	10.8	14.4	75%	19.0	132%
Stringer Creek	SNOTEL	6550	10	4.1	8.1	51%	14.4	178%
Stryker Basin	SC	6180	62	26.3	30.3	87%	43.0	142%
Stuart Mountain	SNOTEL	7400	72	32.5	29.4	111%	42.6	145%

Taylor Road	SC	4080	0	0.0	0.0		0.0	
	Network	Elevation (ft)	Depth (in)	SWE (in)	Median (in)	% Median	Last Year SWE (in)	Last Year % Median
Ten Mile Lower	SC	6600	4	0.6	2.7	22%	11.6	430%
Ten Mile Middle	SC	6800	22	7.4	9.4	79%	18.0	191%
Tepee Creek	SNOTEL	8000	6	2.2	13.4	16%	11.9	89%
Timberline Creek	SC	8850	32	11.1	13.8	80%	22.7	164%
Tizer Basin	SNOTEL	6880	3	1.1	8.2	13%	12.1	148%
Trinkus Lake	SC	6100	70	35.5	38.8	91%	58.3	150%
Truman Creek	SC	4060	0	0.0	0.0		0.0	
Twelvemile Creek	SNOTEL	5600	0	0.0	3.4	0%	18.2	535%
Twenty-One Mile	SC	7150	0	0.0	11.3	0%	12.2	108%
Twin Lakes	SNOTEL	6400	51	26.2	33.0	79%	57.5	174%
Upper Holland Lake	SC	6200		21.9	30.4	72%	43.7	144%
Waldron	SNOTEL	5600	0	0.0	4.8	0%	13.8	288%
Warm Springs	SNOTEL	7800	57	22.5	21.4	105%	33.9	158%
Weasel Divide	SC	5450	43	17.3	28.8	60%	41.3	143%
West Yellowstone	SNOTEL	6700	0	0.0	1.8	0%	4.2	233%
Whiskey Creek	SNOTEL	6800	9	4.1	14.6	28%	17.4	119%
White Elephant	SNOTEL	7710	21	9.9	24.0	41%	28.3	118%
White Mill	SNOTEL	8700	49	22.2	23.8	93%	36.5	153%
Wolverine	SNOTEL	7650	0	0.0	2.5	0%	12.7	508%
Wood Creek	SNOTEL	5960	0	0.0	6.8	0%	12.3	181%
Wrong Creek	SC	5700	1	0.1	4.7	2%	12.8	272%
Wrong Ridge	SC	6800		5.2	13.0	40%	19.5	150%
Younts Peak	SNOTEL	8350			15.5			
Basin Index						61%		156%
# of sites						155		155

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Montana
Water Supply Outlook
Report
Natural Resources Conservation Service

